

COREHOLE SG-1

THIS ENVELOPE CONTAINS THE FOLLOWING  
GEOPHYSICAL LOGS:

1. Schlumberger Sonic
2. Schlumberger Borehole Compensated  
Sonic
3. Schlumberger Laterolog

II B-2205

U.S. DEPARTMENT OF THE INTERIOR  
PROTOTYPE OIL SHALE LEASING PROGRAM

TRACT C-b  
QUARTERLY REPORT #2  
(Through February 28, 1975)

Submitted to:

Mr. Peter A. Rutledge  
Area Oil Shale Supervisor  
Conservation District  
U. S. Geological Survey  
Grand Junction, Colorado

By:

Ashland Oil, Inc.  
Atlantic Richfield Company, Operator  
Shell Oil Company  
The Oil Shale Corporation

APRIL 14, 1975

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## II B-10 Lithologic Logs

The lithologic logs present a description of rock types encountered in a core hole. The detail of description varies with depth and operation. In most cases, however, the lithology is described from drill cuttings on ten-foot intervals above the "A" groove. In the lower zones, the lithology is described from cores on one-foot intervals.

In addition to providing a means for describing lithology, the litholog presents data such as information on structural dip, joints, fractures, and general rock quality data. These data are entered in the lithologic log at the appropriate depth.

A field lithologic log has been made on each well drilled. Table II B-10.1 shows those wells for which a lithologic log is included in either the First or the Second Quarterly Report.

SENSITIVE MATERIAL

LOGS AVAILABLE ONLY BY PERMISSION OF AOSS



TABLE 11 B-10.1

## LITHOLOGIC LOGS

ALLUVIAL WELLS		AQUIFER TEST WELLS		CORE HOLES	
A-1	1	AT-1	1	SG-1	1
A-2	1	AT-1a	1	SG-1a	2
A-3	1	AT-1a1	1	SG-6	1
A-4	1	AT-1b	1	SG-8	1
A-5	1	AT-1c	1	SG-9	1
A-6	1	AT-1d	1	SG-10	1
A-7	2			SG-10a	1
A-8	1			SG-11	1
A-9	1			SG-17	2
A-10	1			SG-18	1
A-11	1			SG-18a	1
A-12	1			SG-19	1
A-13	1			SG-20	2
				SG-21	2
				Cb-2b	1

1, 2 = Indicates Quarterly Report in which litholog is log included.

TABLE II B-11.1

## GEOPHYSICAL LOGS INCLUDED IN QUARTERLY REPORT #2

Well	SG-1	SG-1a	SG-8	SG-9	SG-17	SG-20	SG-21
Log (Schlumberger)							
Sonic	X		X				
Sonic, Bore hole Compensated	X		X	X	X	X	X
Laterolog	X		X	X			
Dual Laterolog	X				X		X
Formation Density	X	X	X	X	X	X	X
Temperature	X		X	X	X	X	X





SG-1

Schlumberger

LATEROLOG

COUNTY	RIO BLANCO
FIELD or LOCATION	SORGHUM GULCH
WELL	SORGHUM GULCH #1
COMPANY	ATLANTIC RICHFIELD
COMPANY ATLANTIC RICHFIELD COMPANY	
WELL SORGHUM GULCH #1	
FIELD SORGHUM GULCH	
COUNTY	RIO BLANCO STATE COLORADO
LOCATION:	API Serial No.
1946' FEL & 1314' FSL	
Sec. 2 Twp. 3S Rge. 97W	Other Services:
	FDC-GR
	RHC-GR
	HRT
	AMP-VDL-GR
Permanent Dotum: GL, Elev. 6428	Elev.: K.B. 6436.5
Log Measured From GL 0 Ft. Above Perm. Dotum	D.F. 6435.5
Drilling Measured From GL	G.L. 6428
Date	12-7-74
Run No.	ONE
Depth-Driller	2525
Depth-Logger	2522
Btm. Log Interval	2518
Top Log Interval	154
Casing-Driller	8 5/8" 156
Casing-Logger	154
Bit Size	6-3/4
Type Fluid in Hole	WATER
Dens.	8.0
Visc.	-
pH	N.A.
Fluid Loss	ml
Source of Sample	MUDPIT
R <sub>m</sub> Meas. Temp.	3.9 @ 64 °F
R <sub>mf</sub> Meas. Temp.	- @ °F
R <sub>mc</sub> Meas. Temp.	- @ °F
Source: R <sub>mf</sub> R <sub>mc</sub>	-
R <sub>m</sub> BHT	2.2 @ 119 °F
Time Since Circ.	11 HOURS
Mox. Rec. Temp.	119 °F
Equip. Location	7683/4116
Recorded By	YATCHAK/ETTER
Witnessed By	BURNS

The well name, location and borehole reference data were furnished by the customer.

FOLD HERE

CHANGES IN MUD TYPE OR ADDITIONAL SAMPLES		SCALE CHANGES	
Date	Sample No.	Type Log	Depth
Depth - Driller			
Type Fluid in Hole			
Dens.			
Visc.			
ph			
Fluid Loss			
Source of Sample			
R <sub>m</sub> Meas. Temp.			
R <sub>mf</sub> Meas. Temp.			
R <sub>mc</sub> Meas. Temp.			
Source: R <sub>mf</sub> R <sub>mc</sub>			
R <sub>m</sub> BHT			
R <sub>mf</sub> BHT			
R <sub>mc</sub> BHT			
REMARKS			
Service Order No. - 6929			
THE LOG IS SATURATING IN HIGHLY RESISTIVE ZONES			
FROM 10,000 TO 30,000 OHMS.			
SP TRACED FROM "NO POWER" RUN			
EQUIPMENT DATA			
Run No.	ONE		
Panel No.	790E		
Cart. No.	798		
Slide No.	798		
Mem. Panel No.	-		
G.R. Cart. No.	-		
G.R. Panel No.	-		
TIR No.	-		
Speed-F.P.M.	60		

# CALIBRATION DATA

CALIBRATION BACKGND. SOURCE GALV. INCR. SENS. TAP SENS. TAP TIME  
CPS. DIVISION (FOR CAL.) (RECORD) CONST.

GAMMA RAY

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to Clause 7 of our General Terms and Conditions as set out in our current Price Schedule.

SPONTANEOUS-POTENTIAL  
MILLIVOLTS

— | 20 | +  
| MV |

DEPTHS

RESISTIVITY  
OHMS. M<sup>2</sup> M

LATEROLOG

2 10 100000 1000 10000 20000 1X10<sup>6</sup> 10000 20000

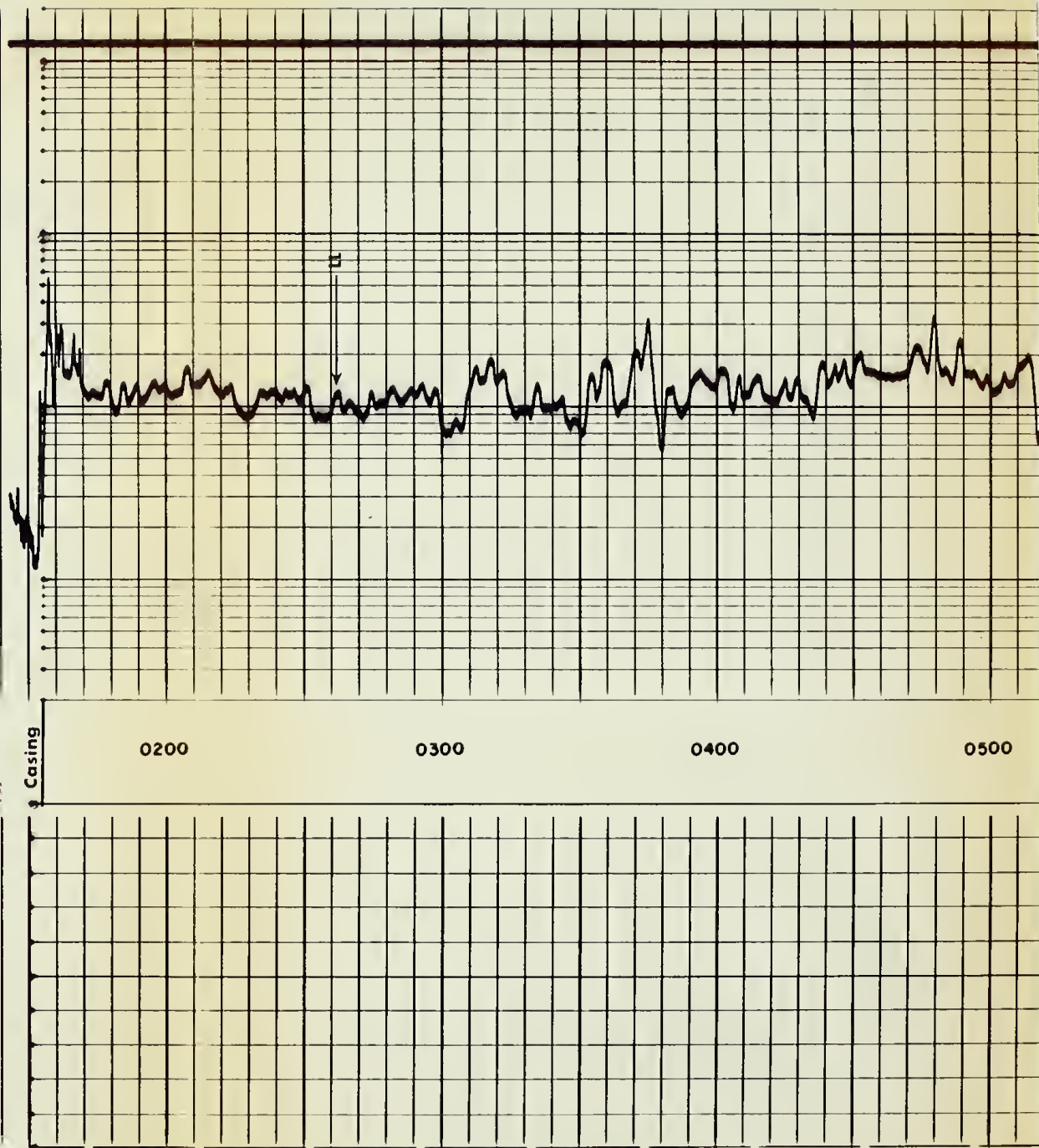
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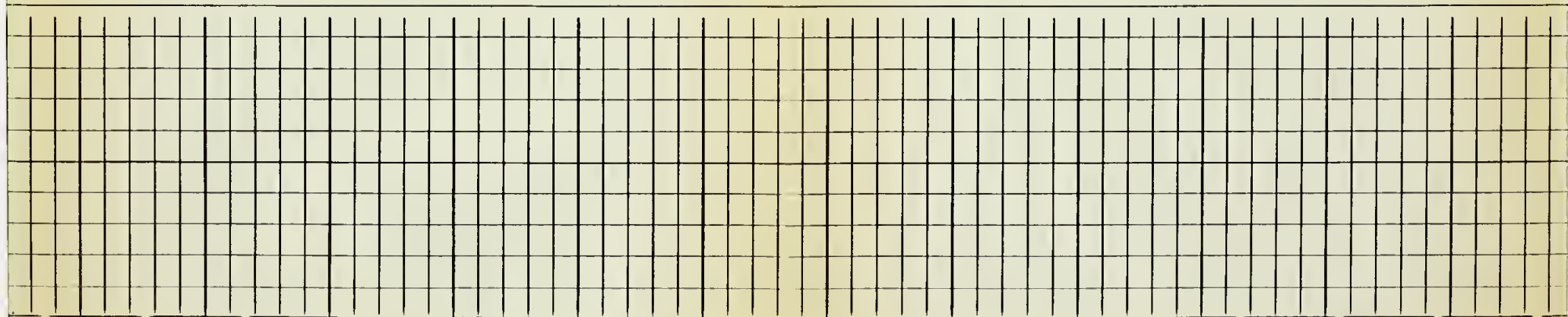
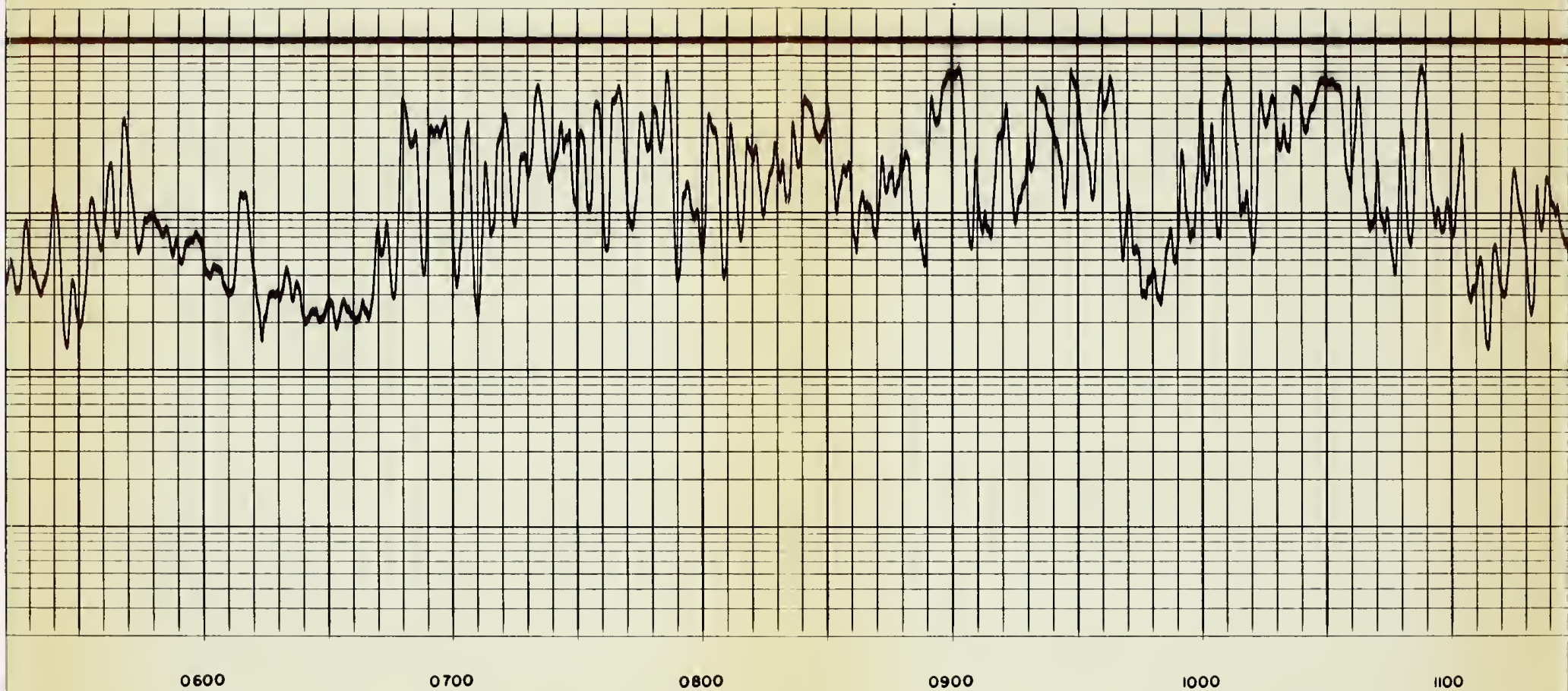
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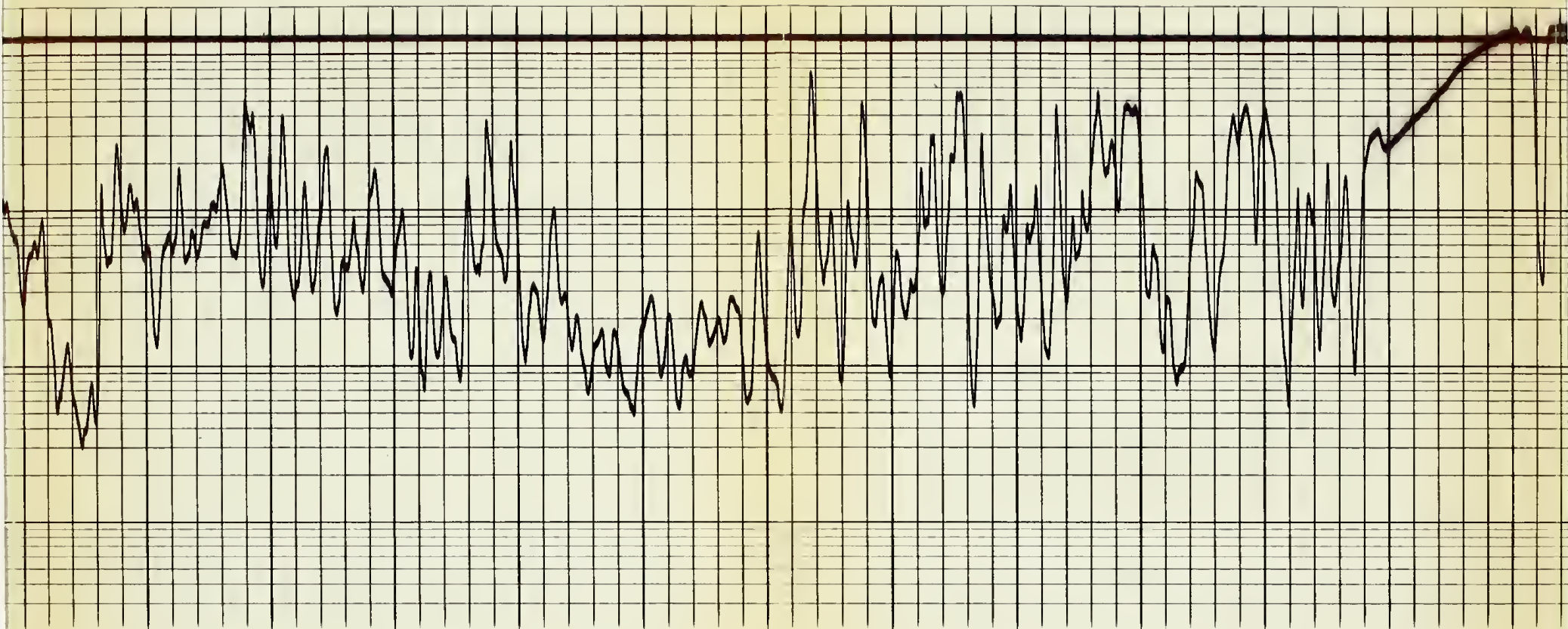
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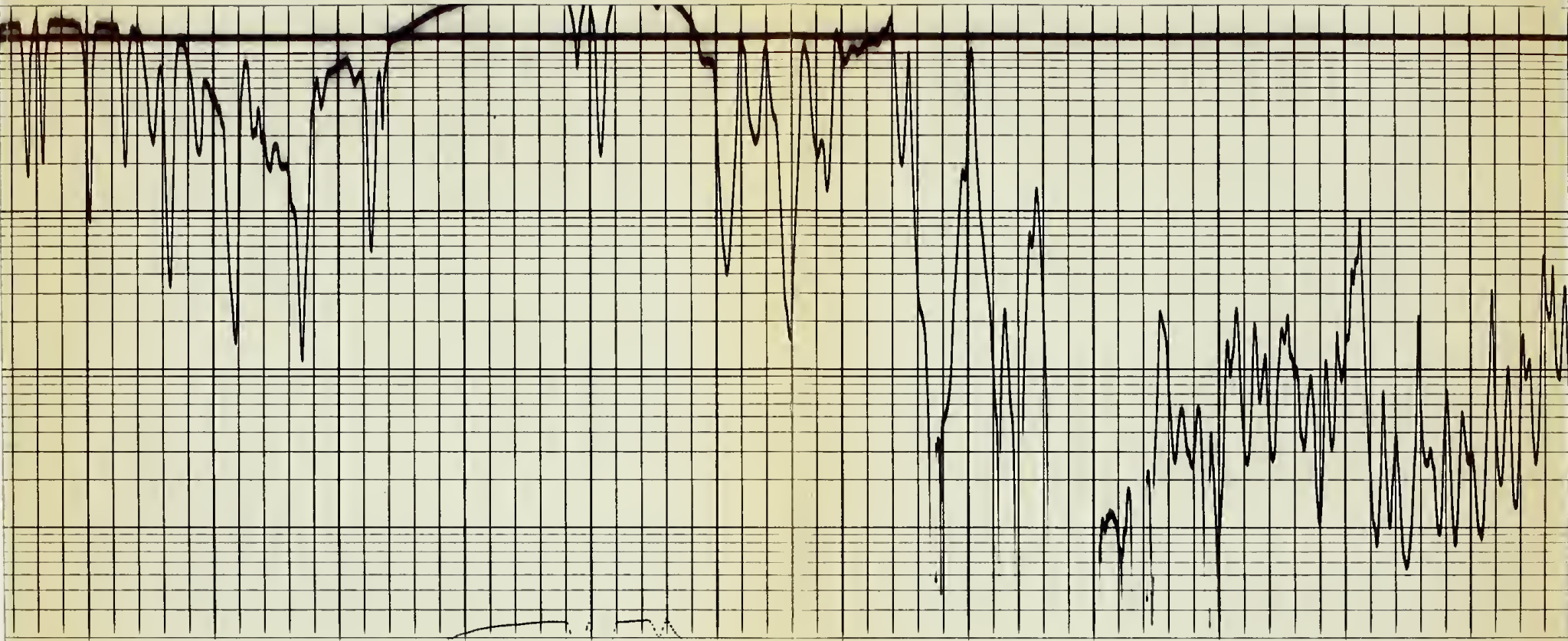
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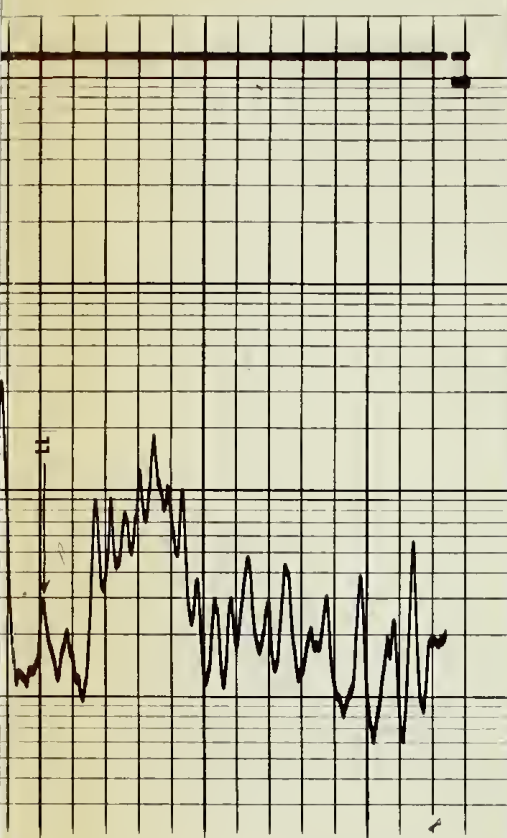
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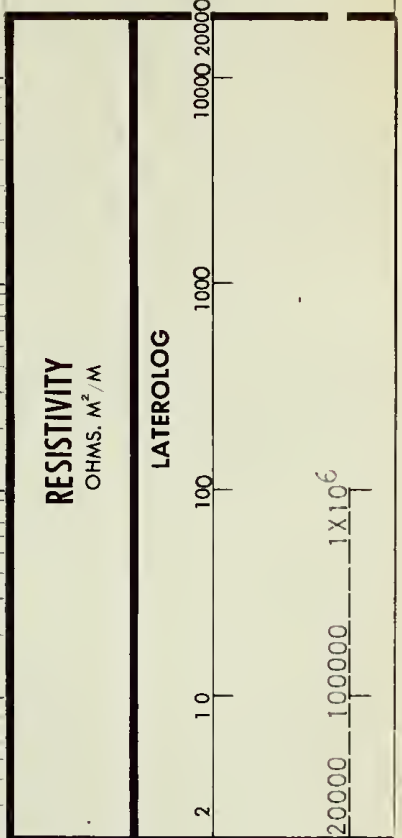
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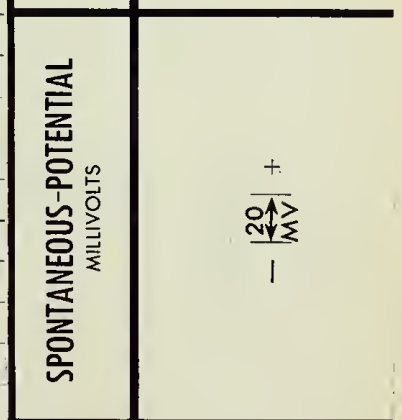
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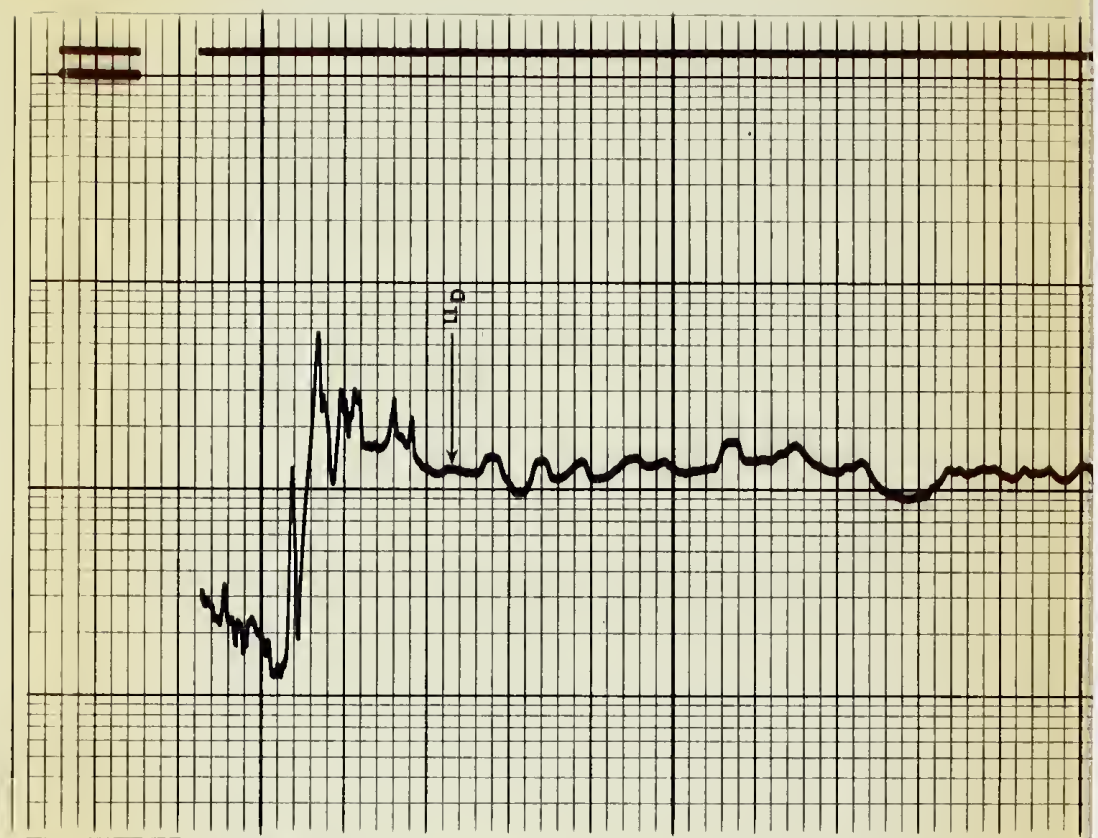
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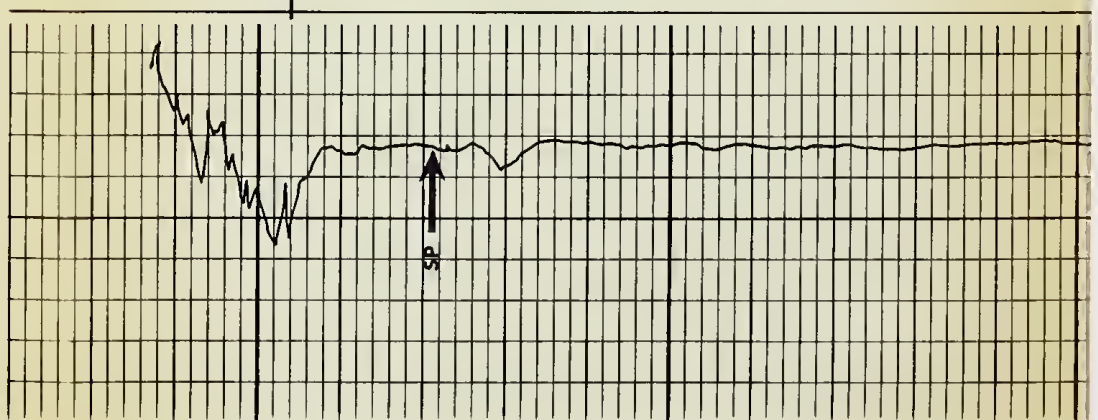
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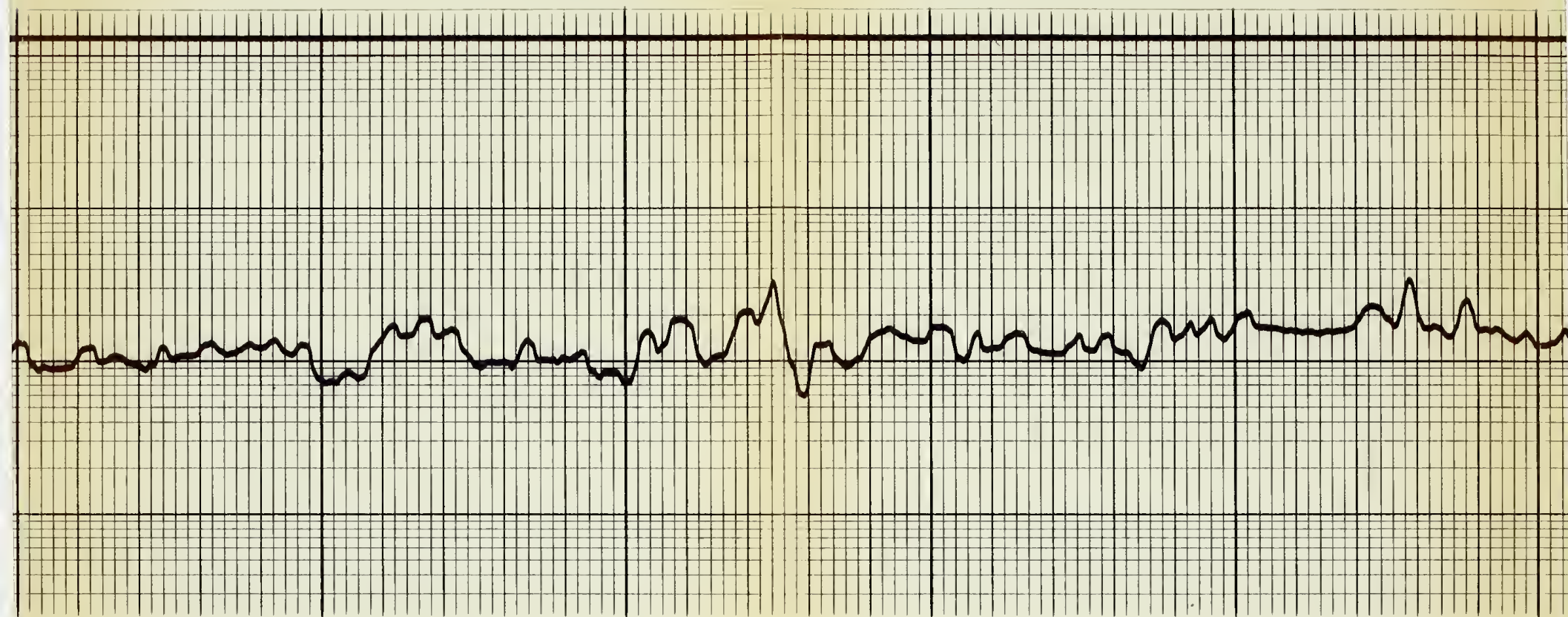


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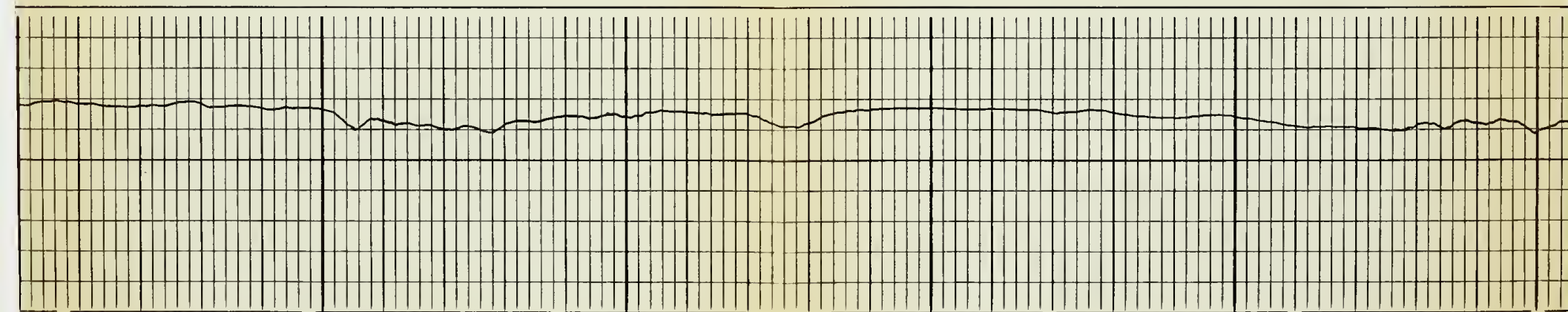


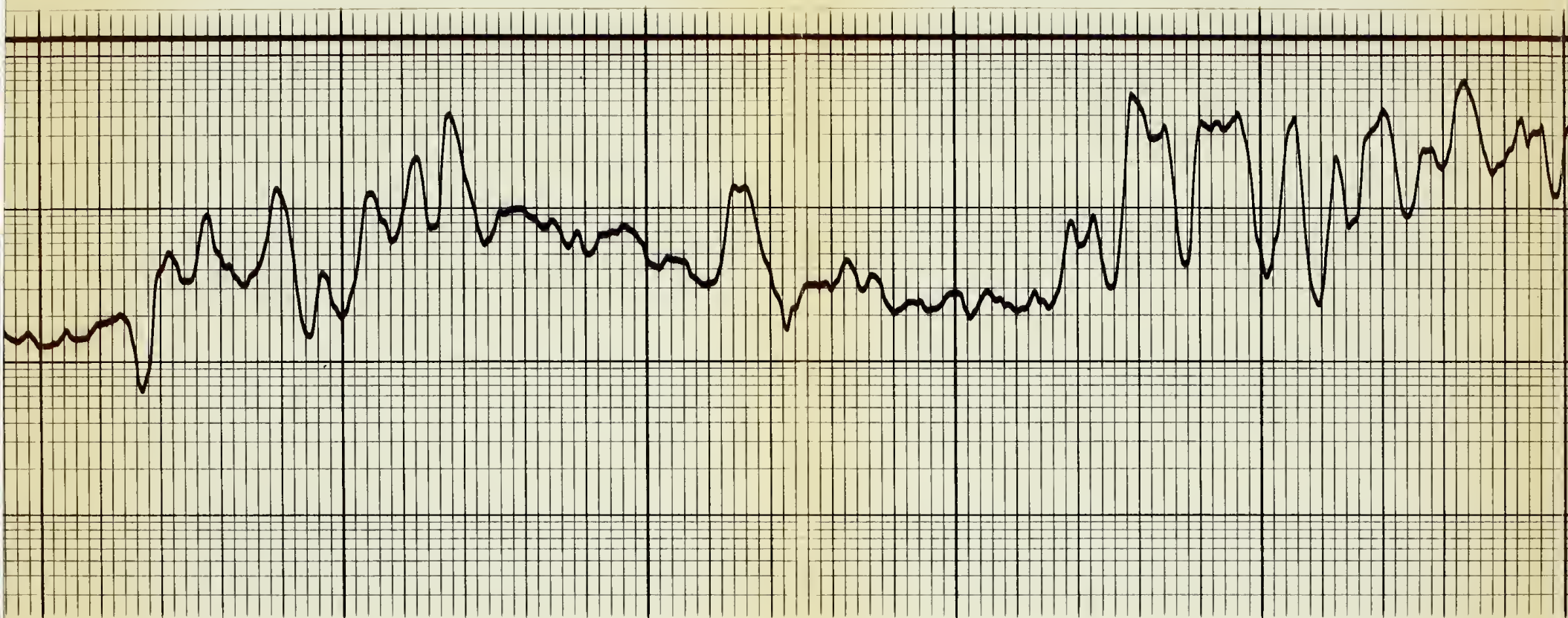


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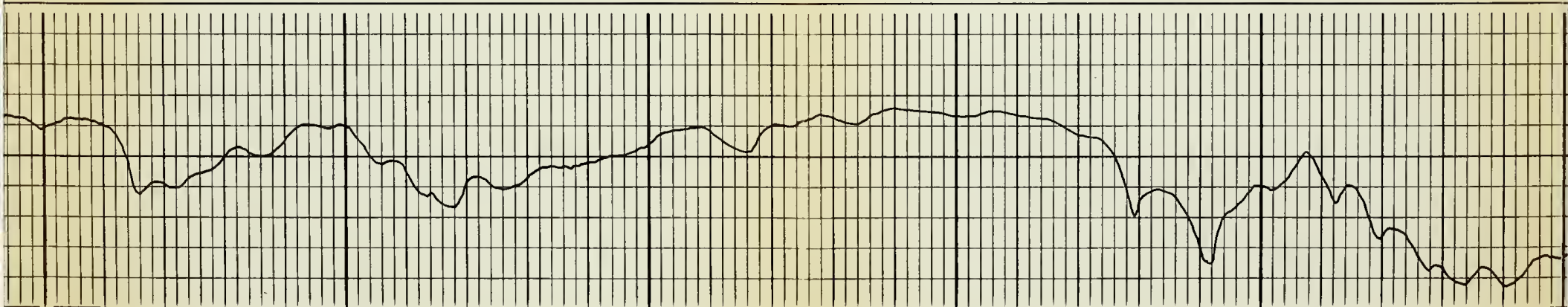




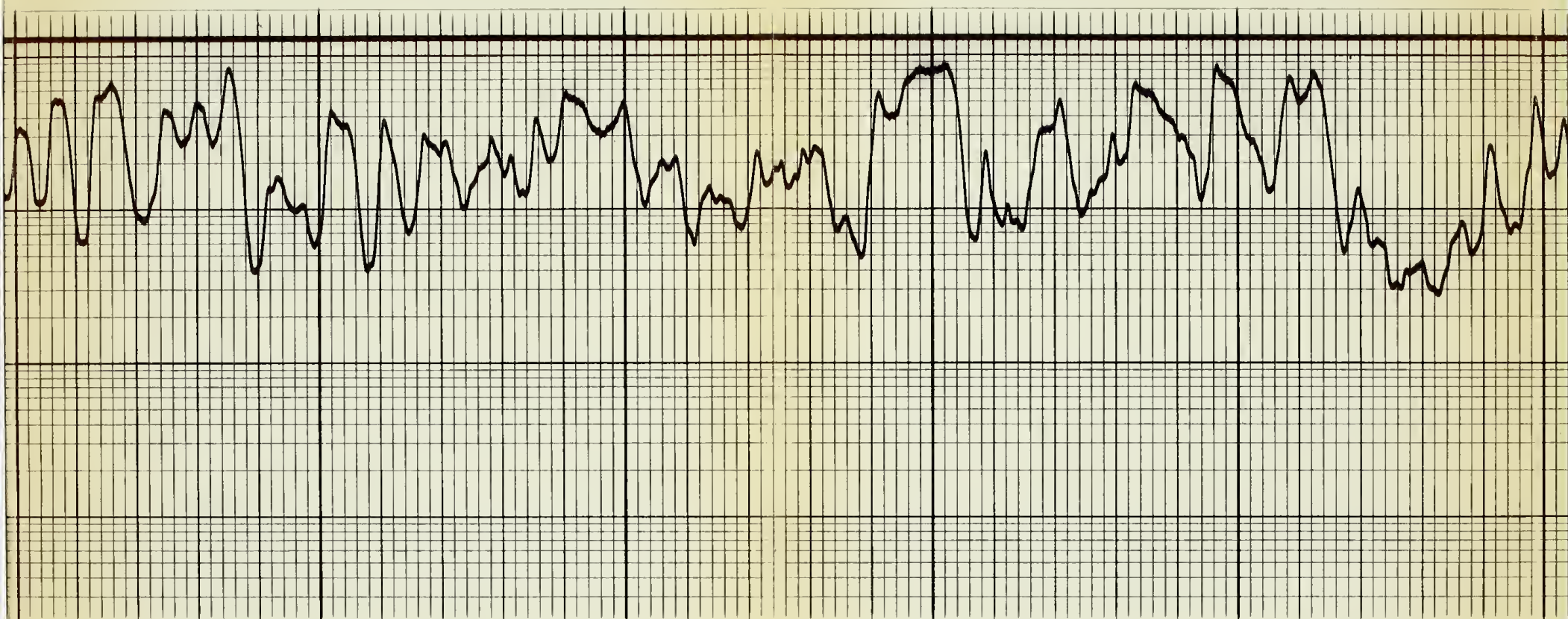
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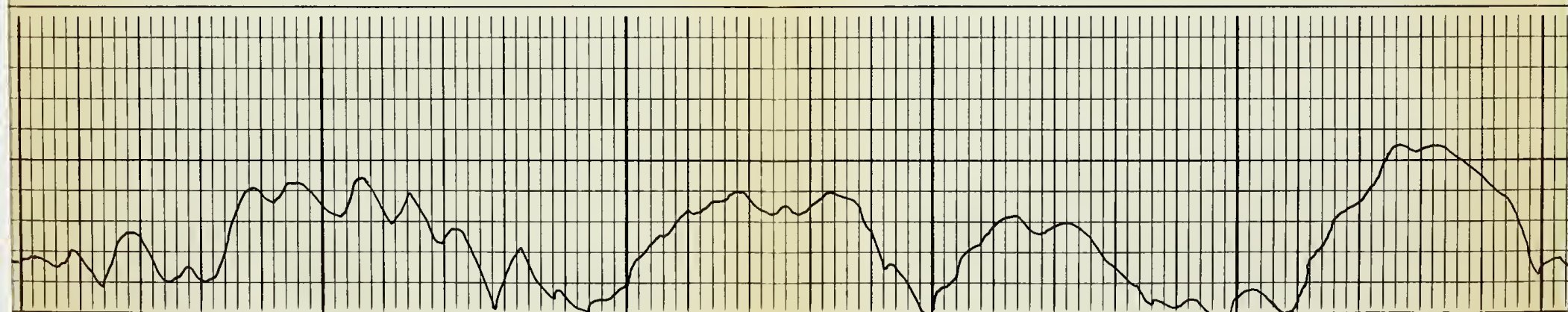


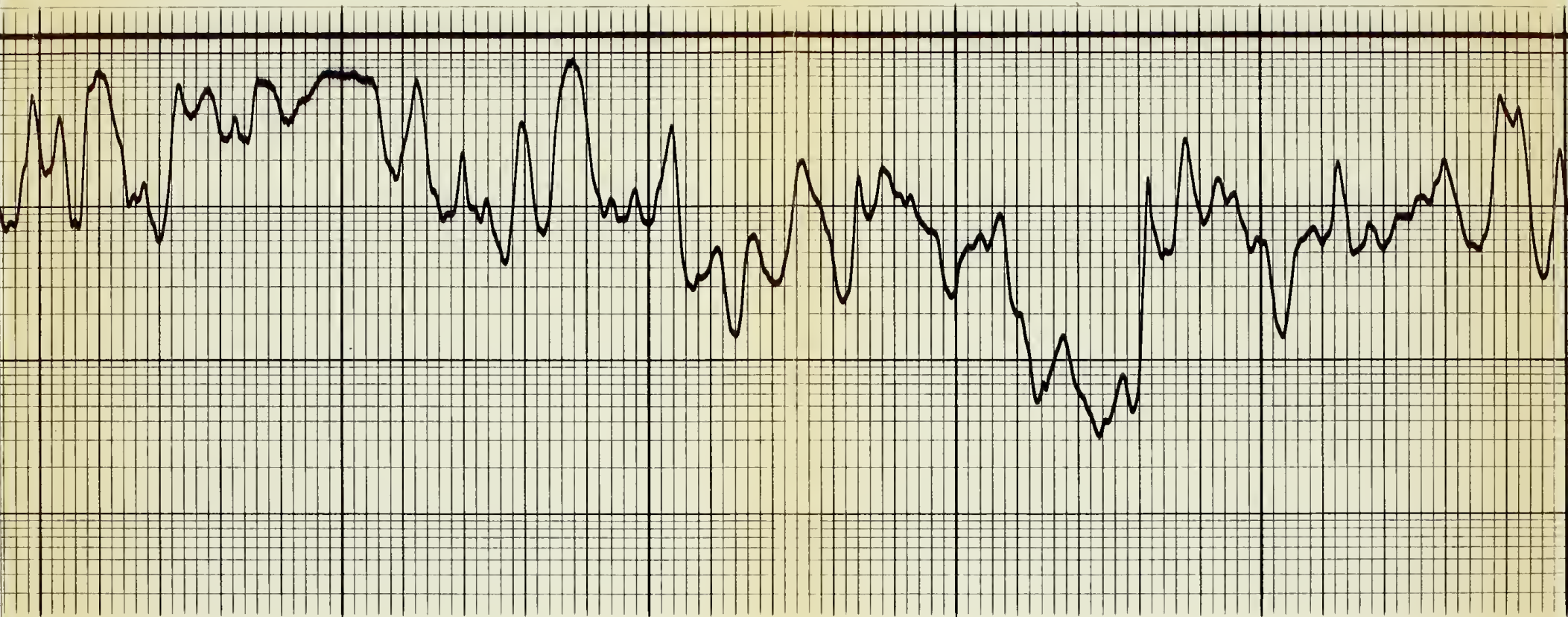


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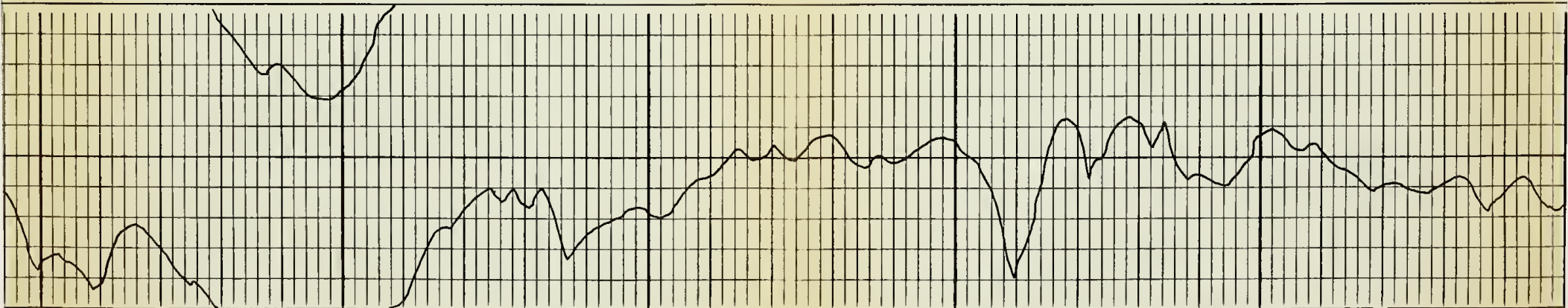




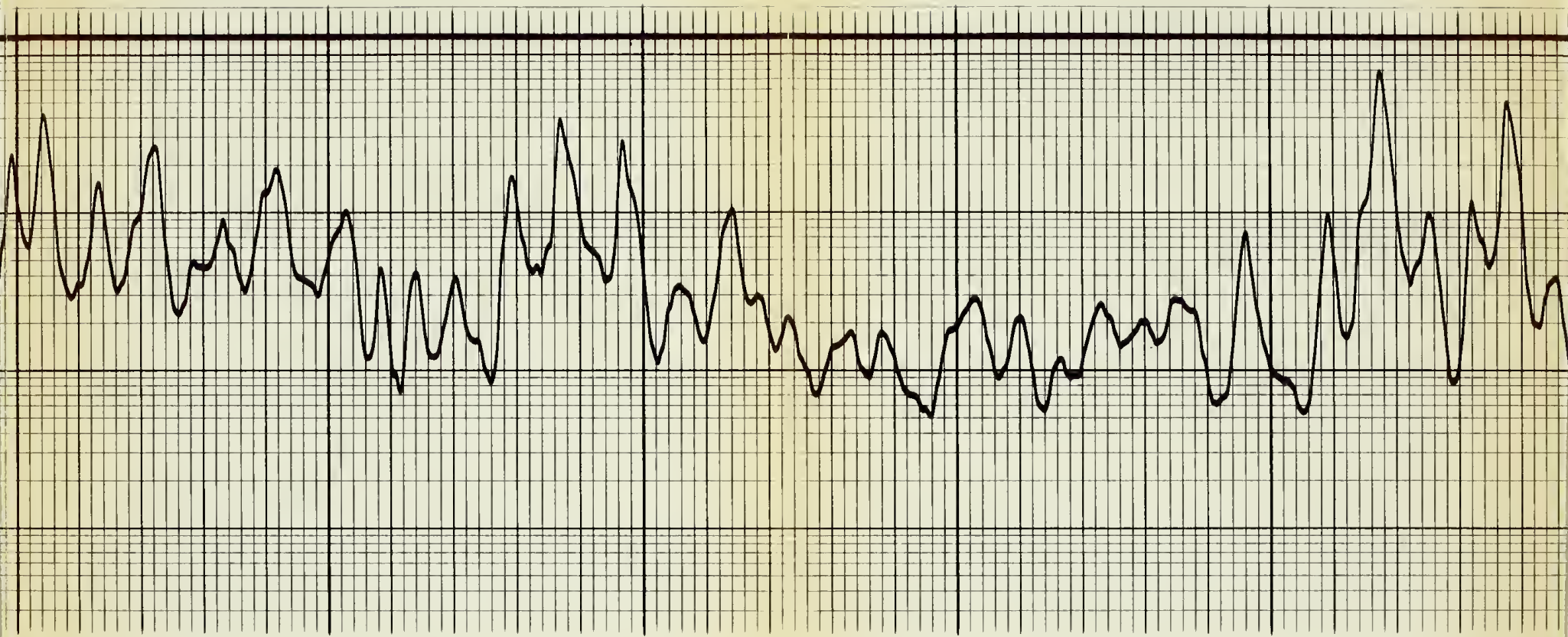
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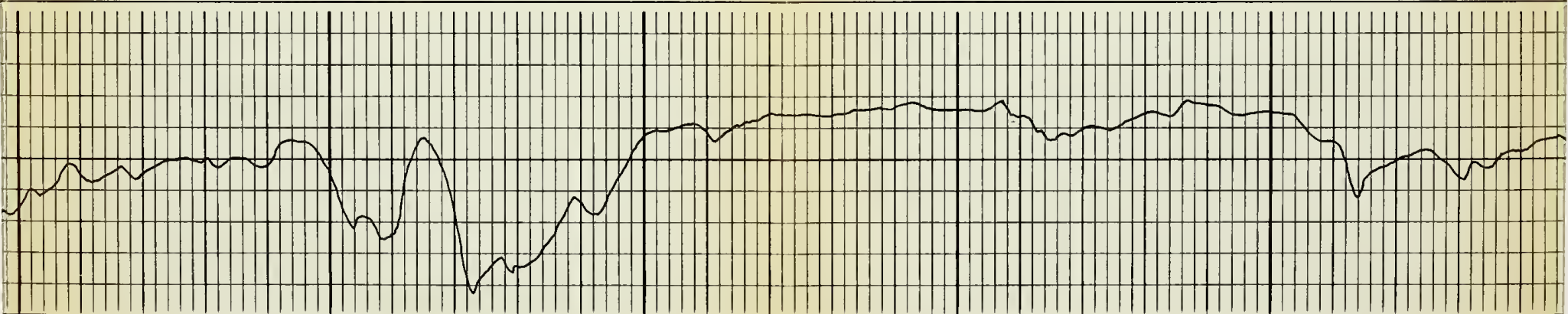


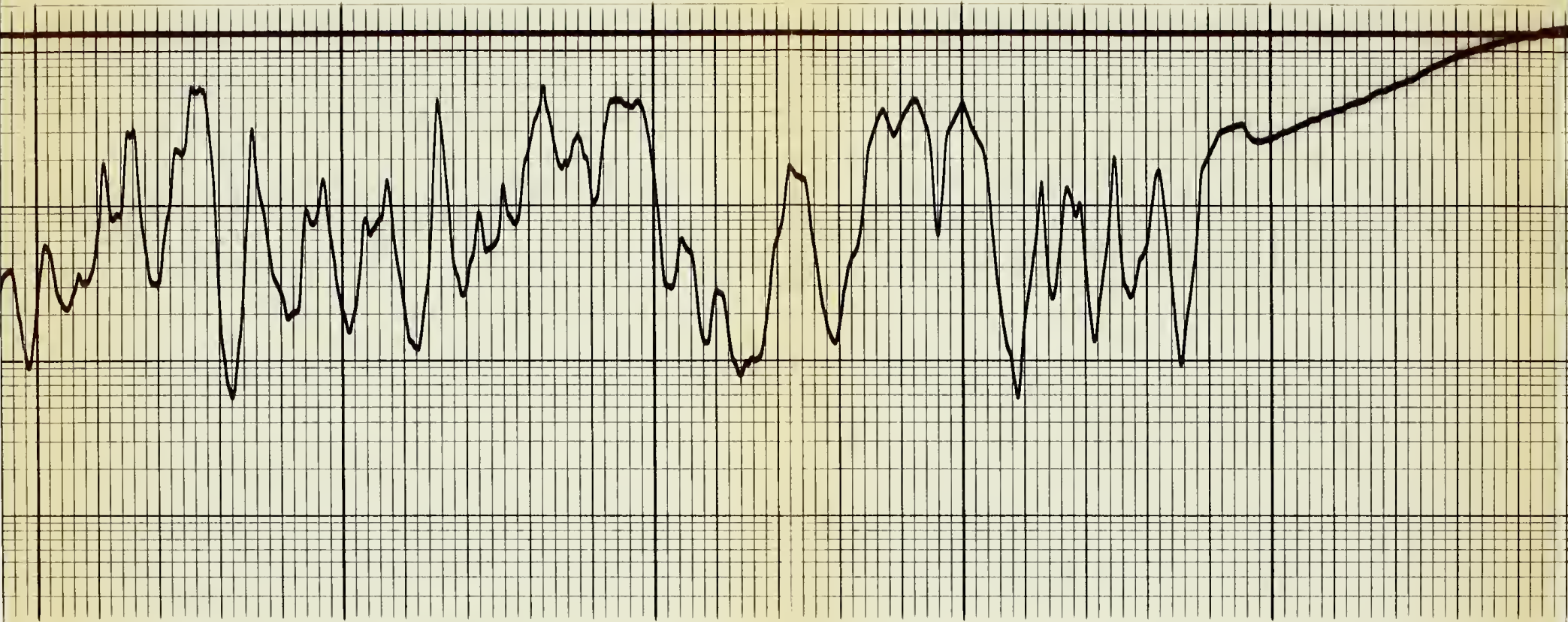




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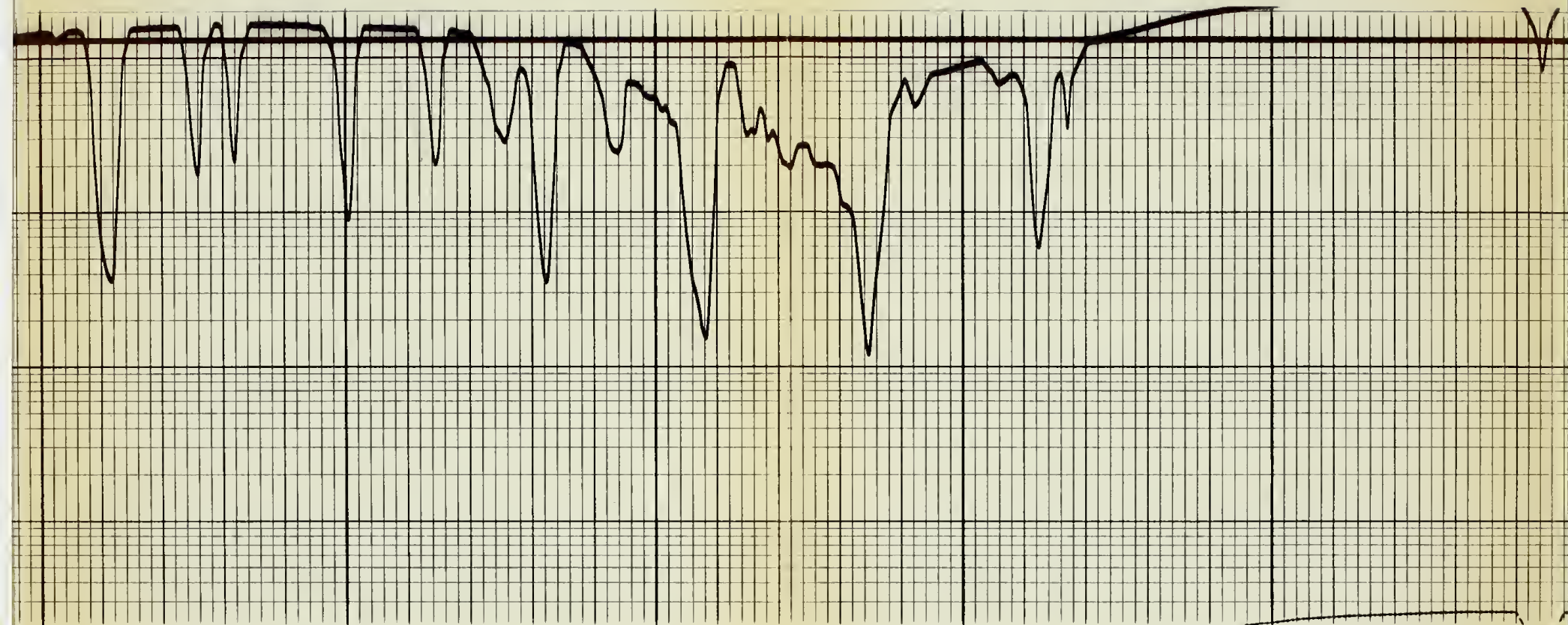
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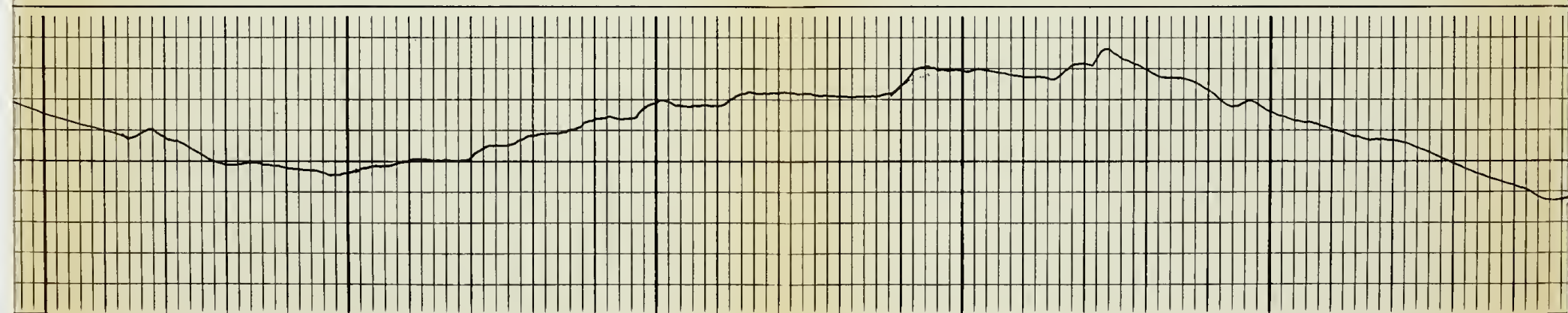


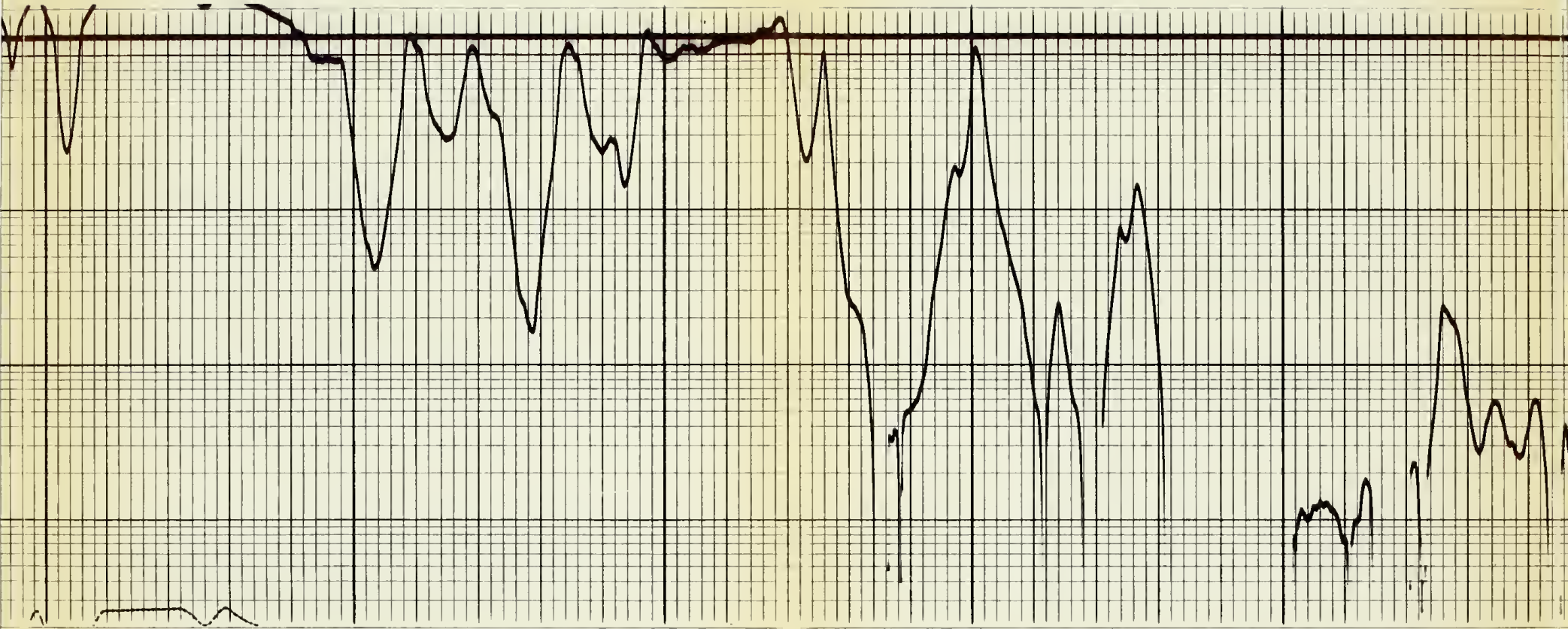


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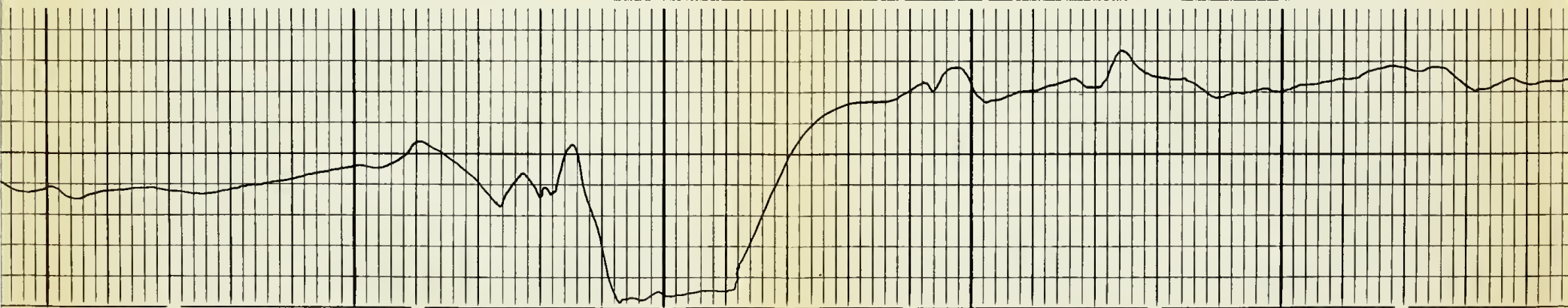




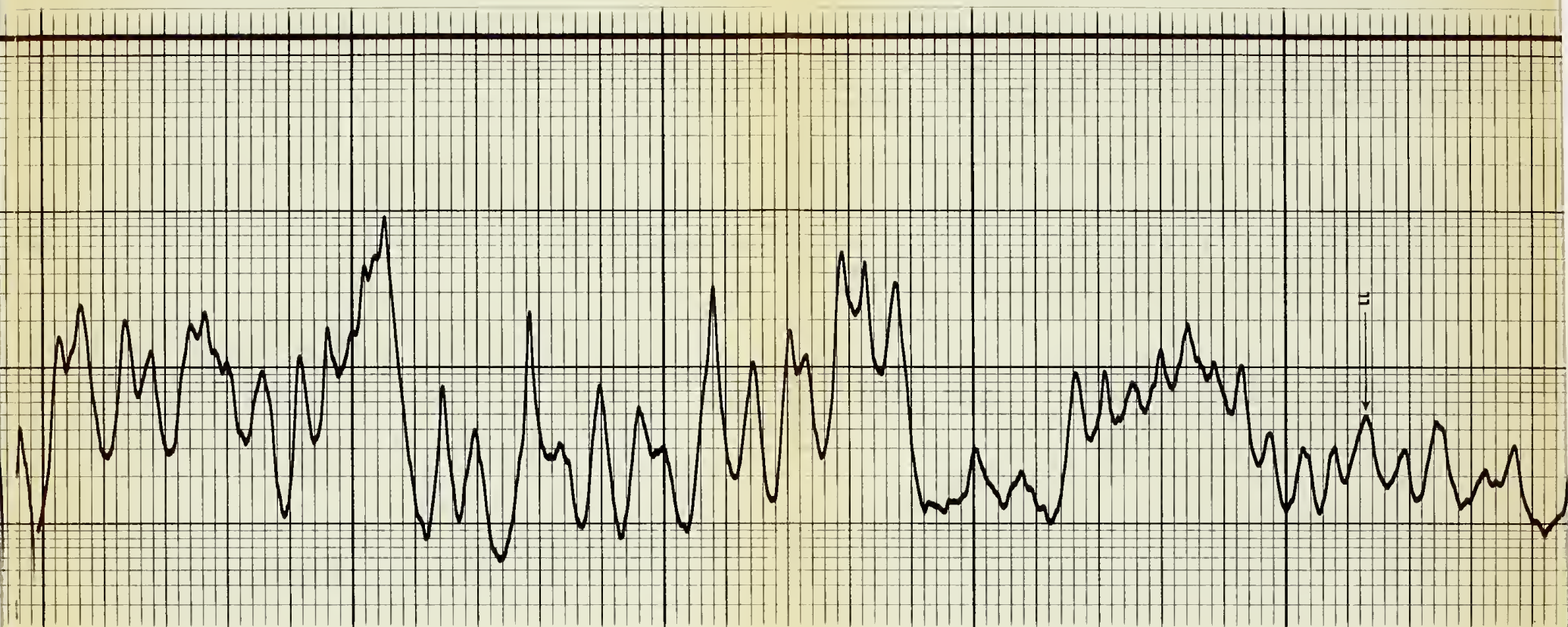
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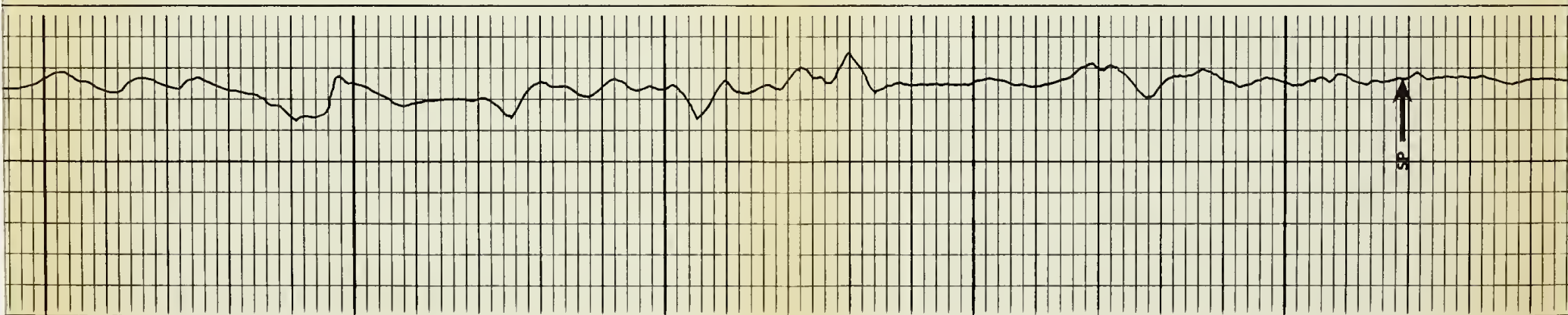


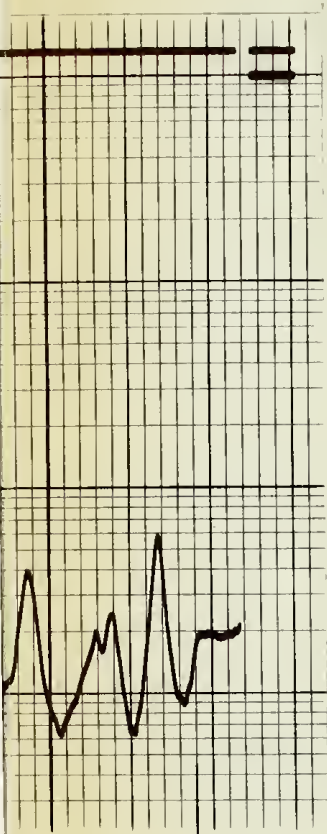




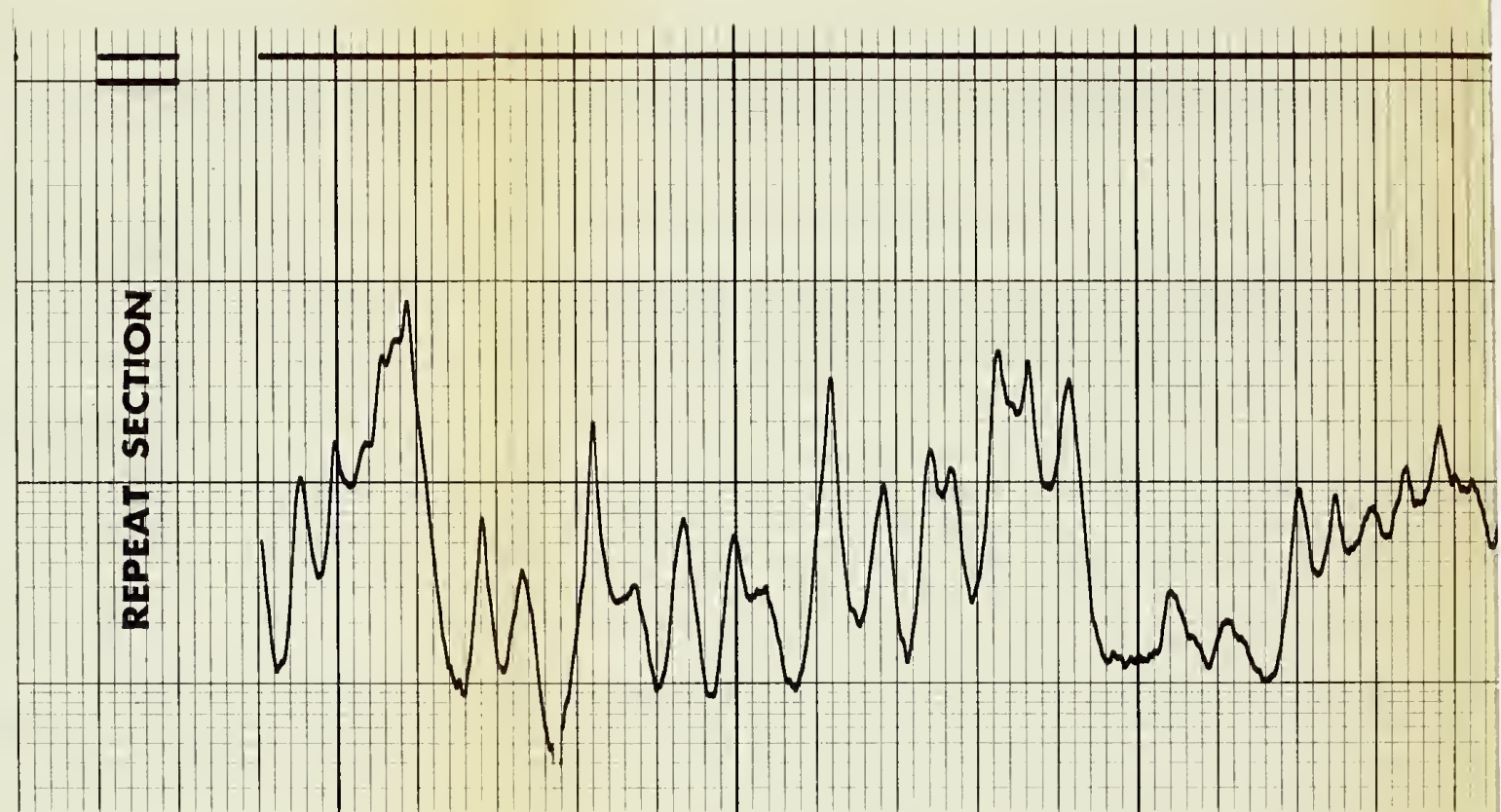
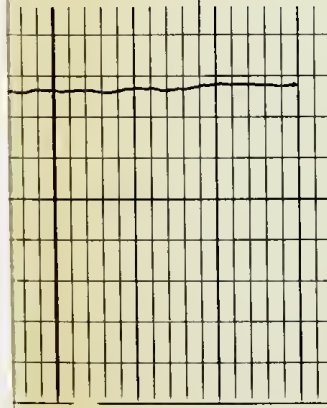
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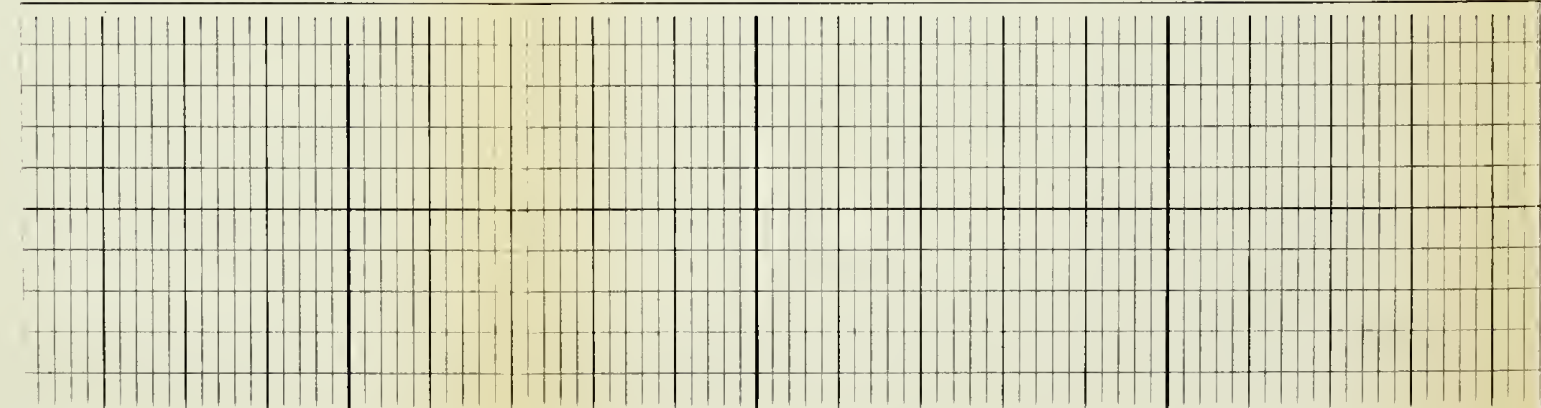




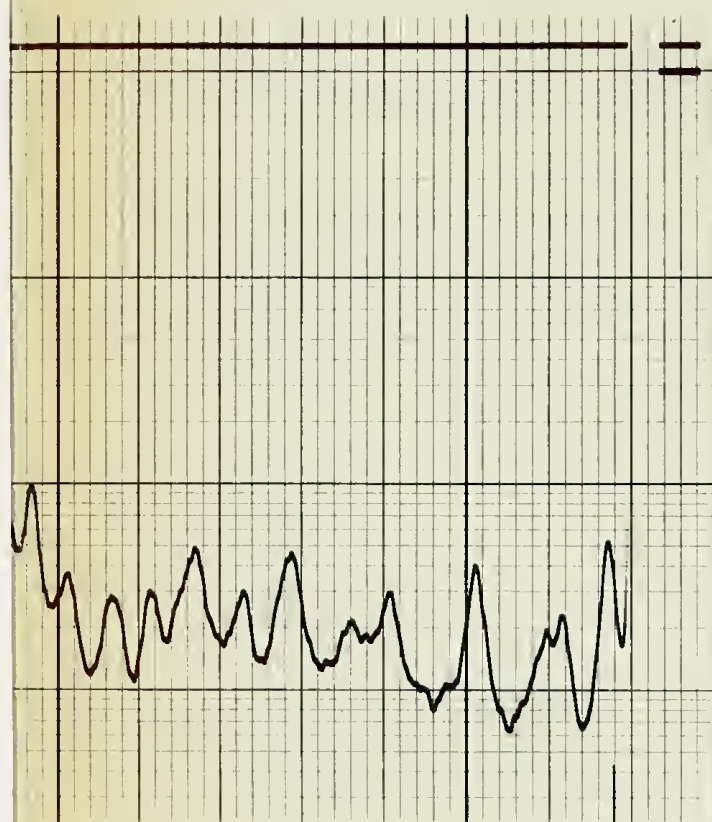
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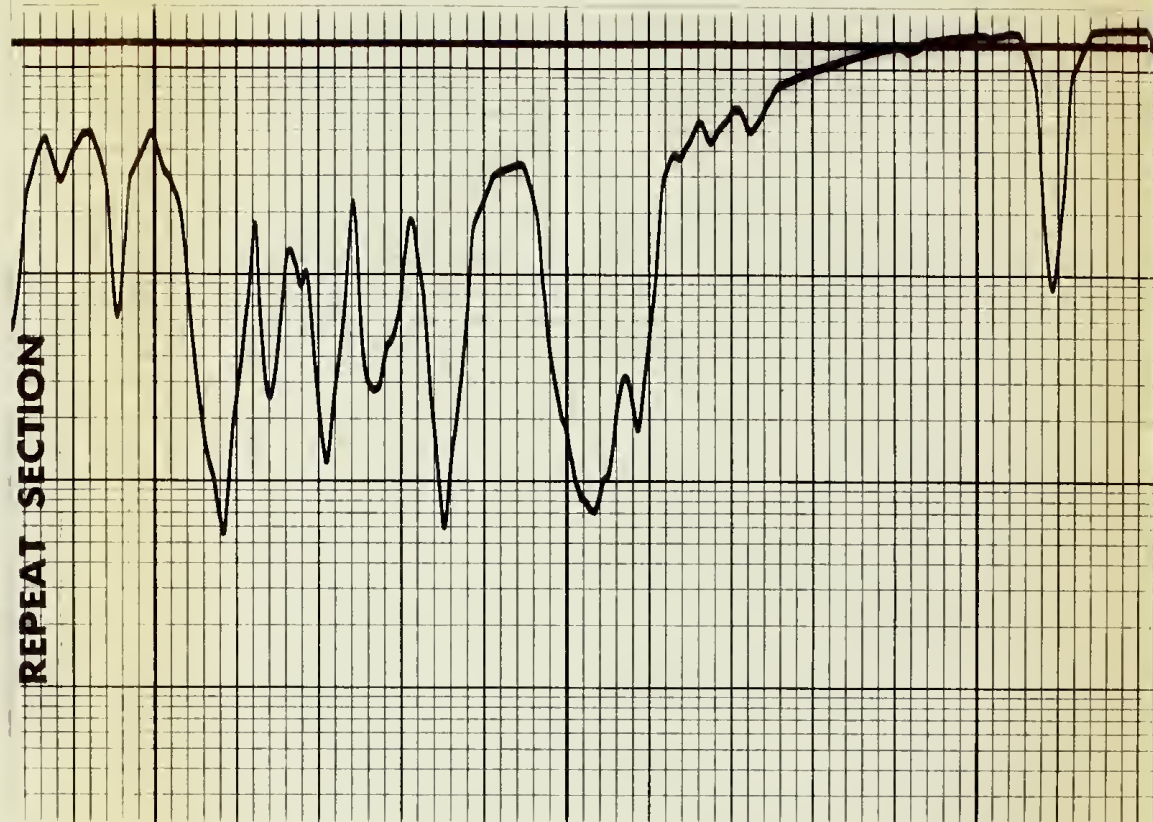
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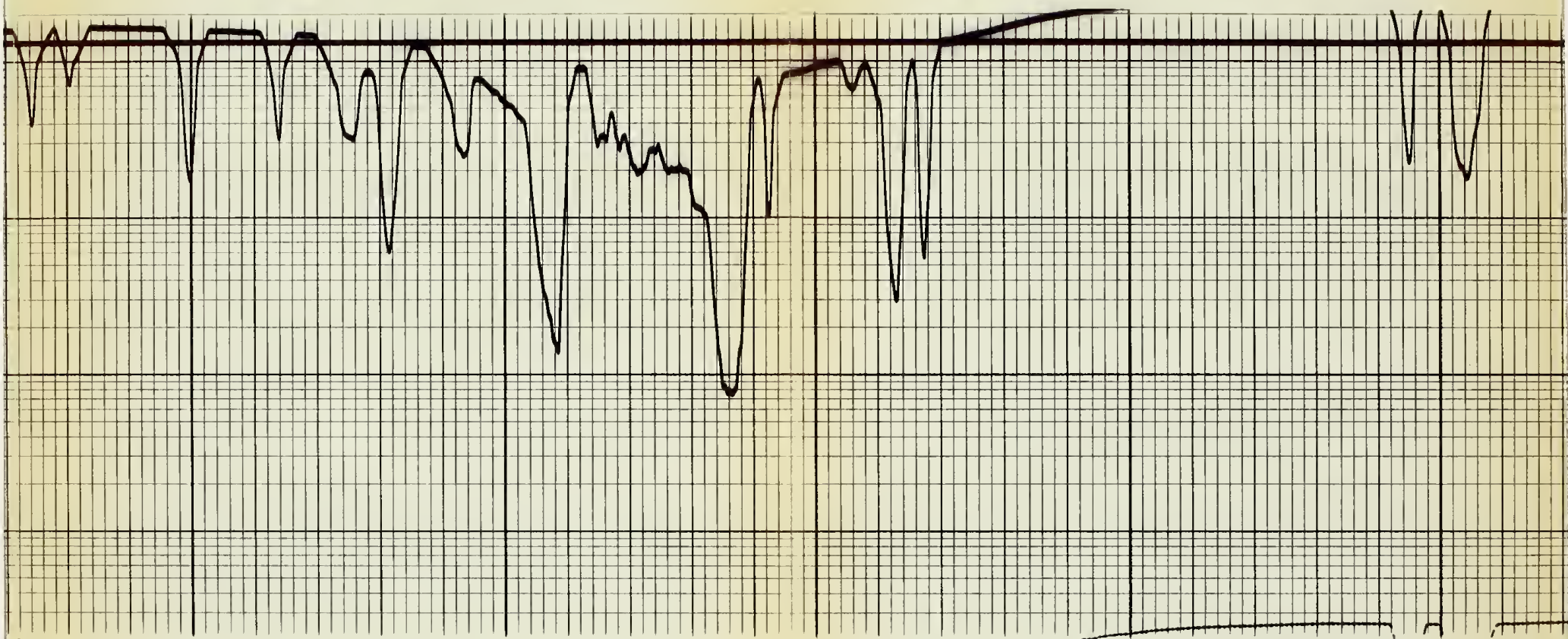




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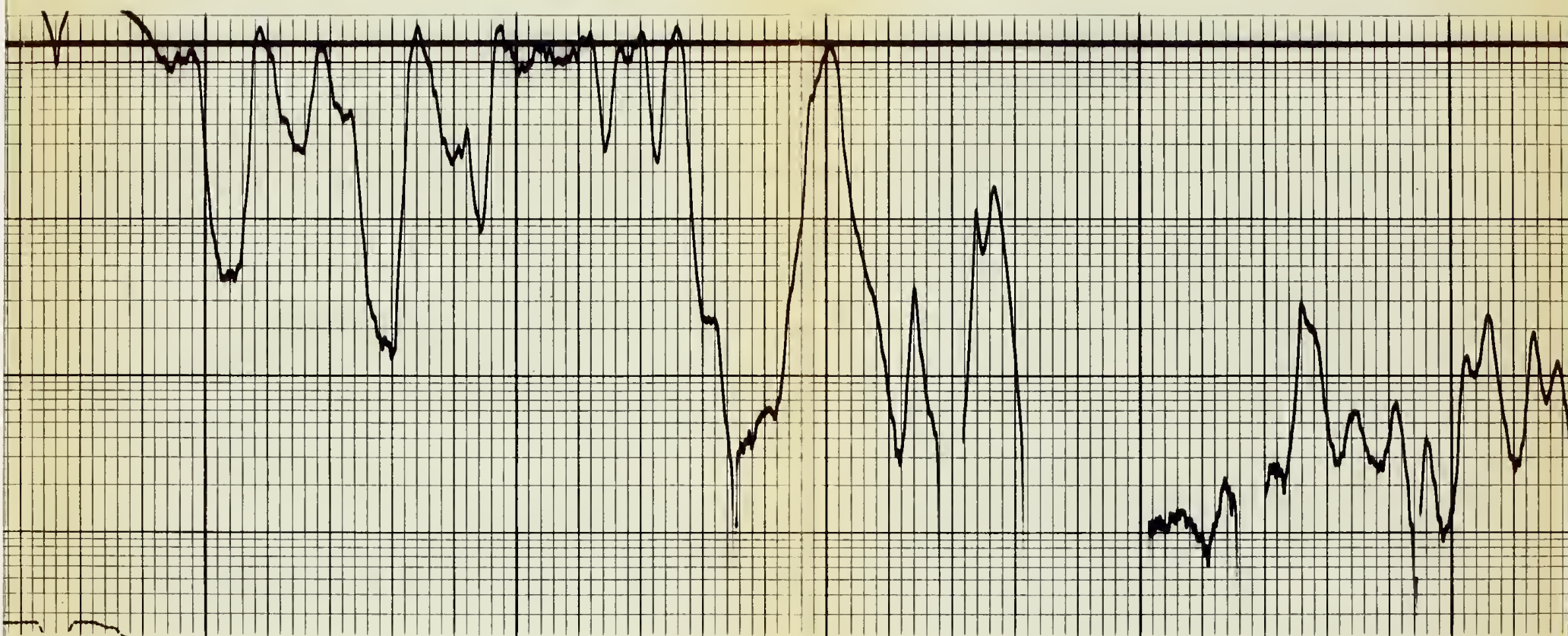


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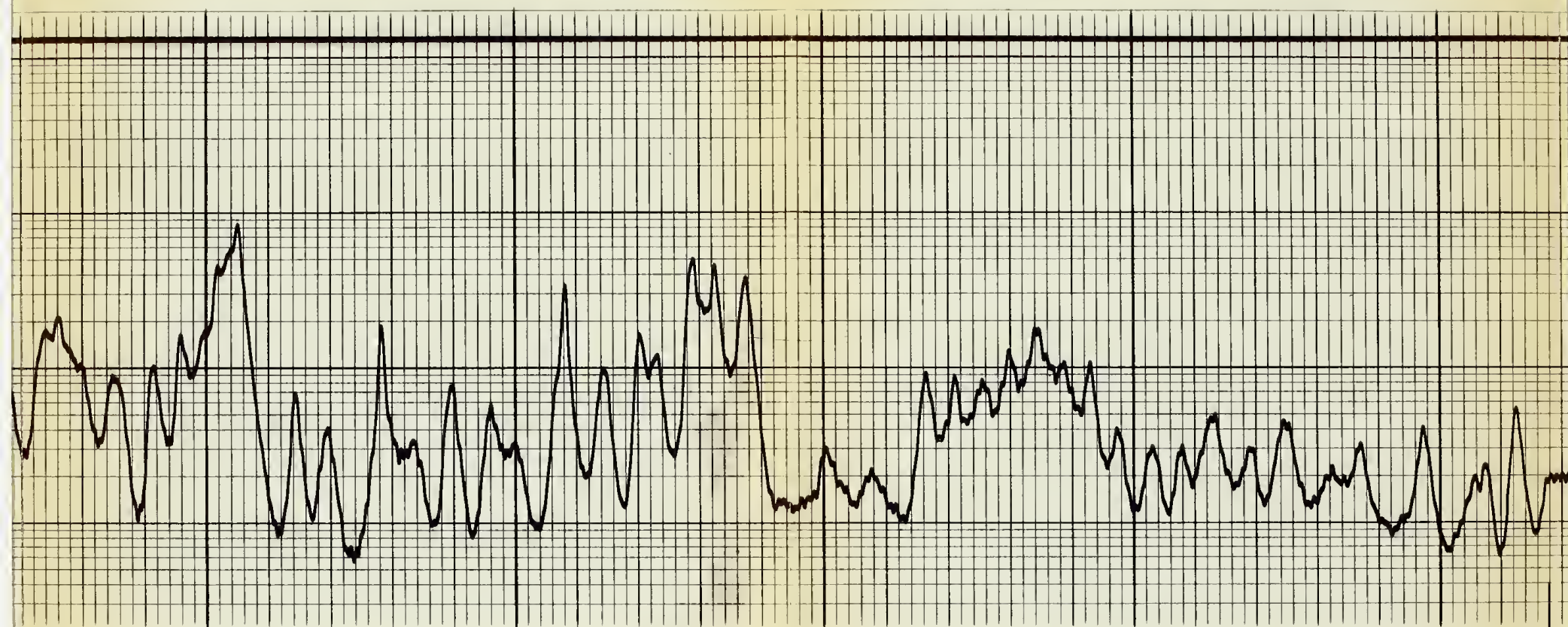
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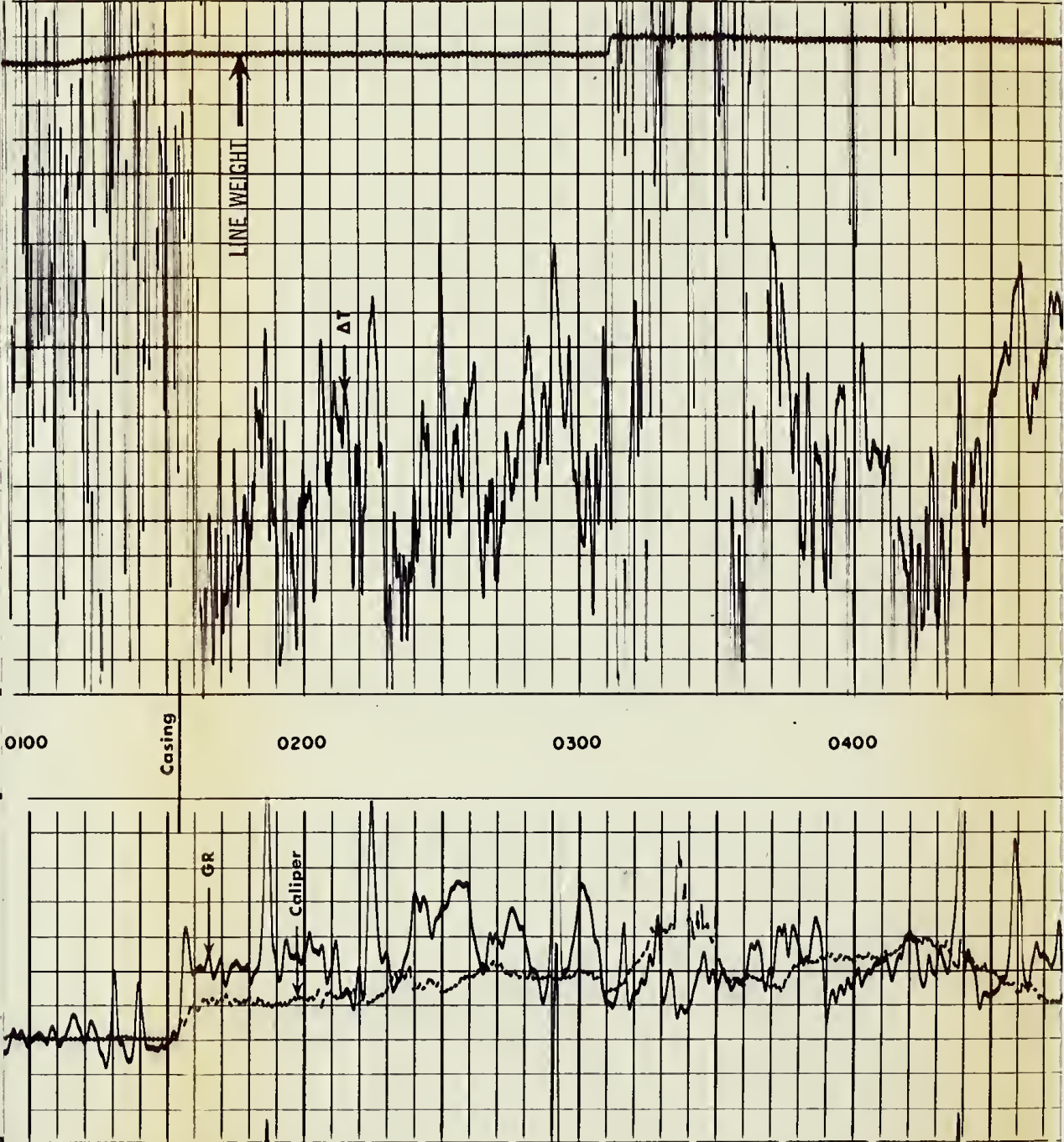


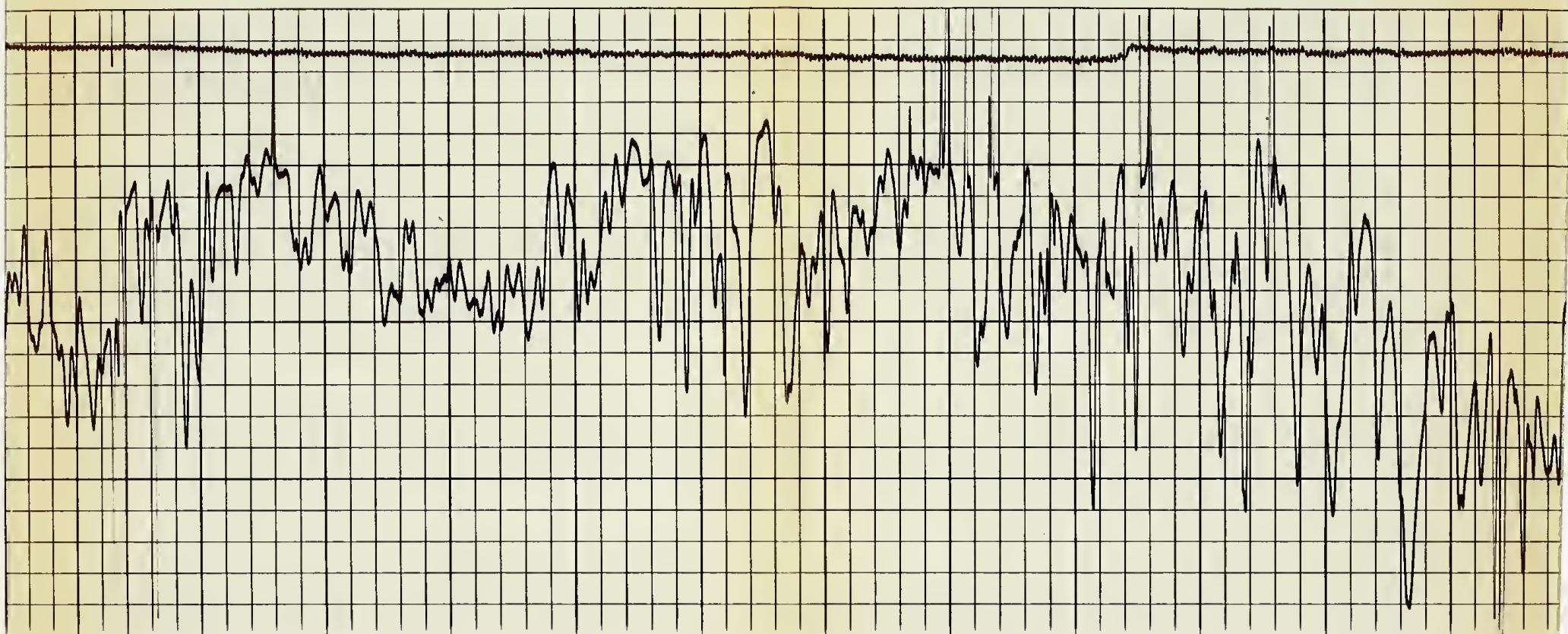


CALIBRATION:	BACKGND.	SOURCE	GALV. INCR.	SENS. TAP	SENS. TAP	TIME
	CPS.	CPS.	DIVISION	(FOR CAL.)	(RECORD)	CONST.
GAMMA RAY:	70	290	10	0-165	0-150	2

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GAMMA RAY API UNITS		DEPTHS	INTERVAL TRANSIT TIME MICROSECONDS PER FOOT	
0	150		150	50
150	300		250	150
CALIPER HOLE DIAM. IN INCHES			WEIGHT LINE →	
5				
15				





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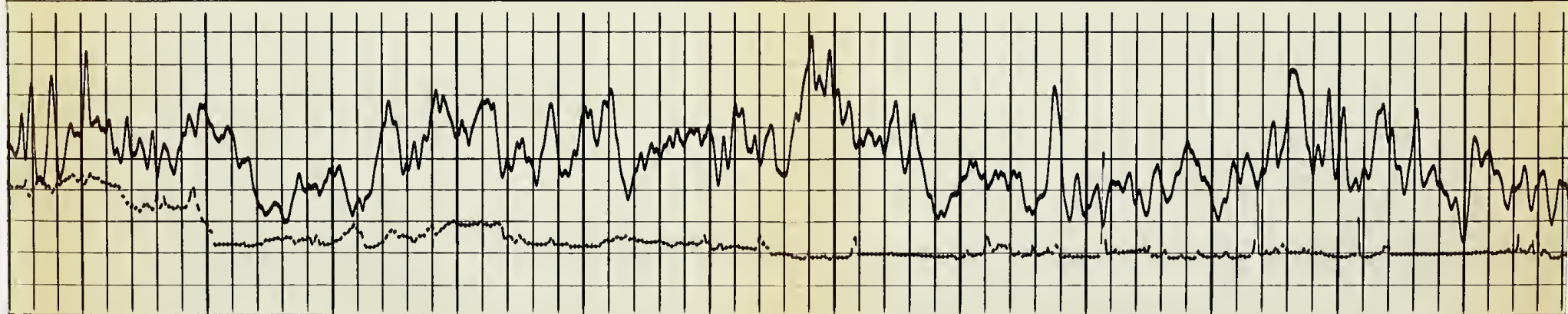
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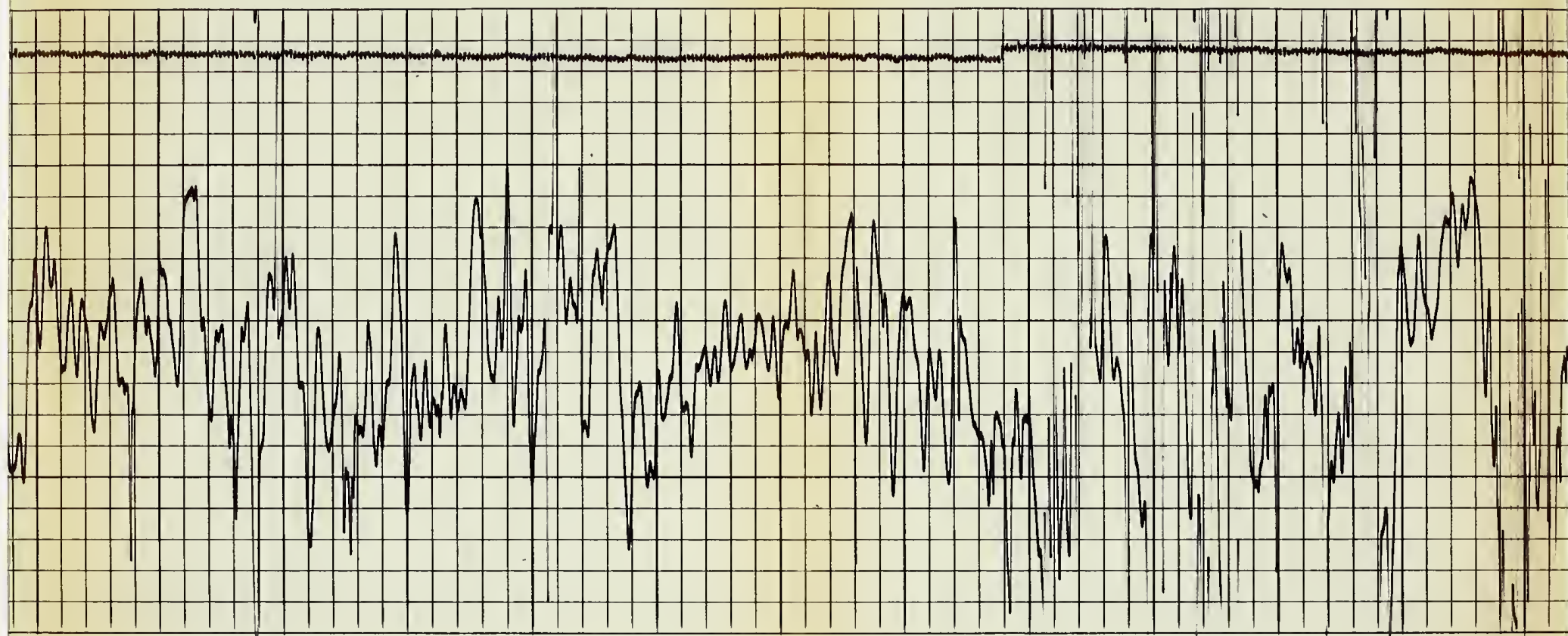
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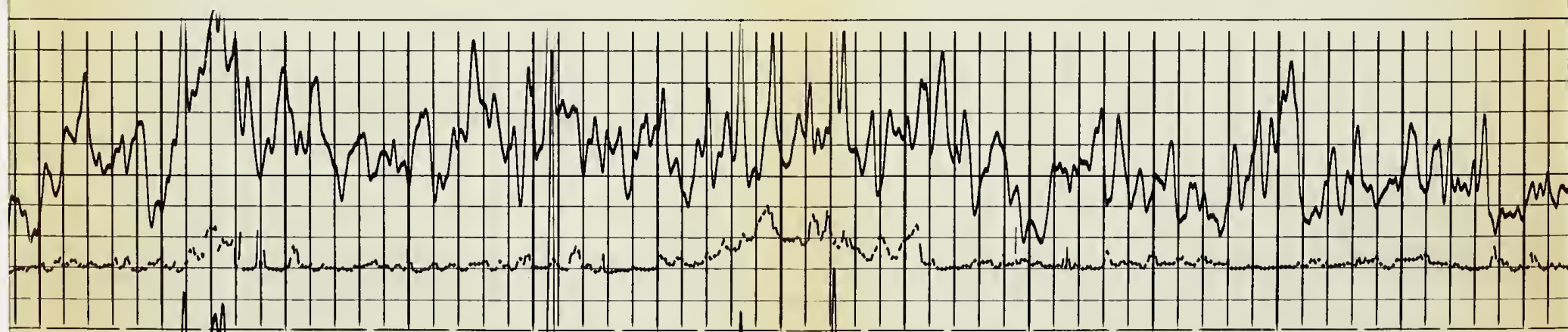
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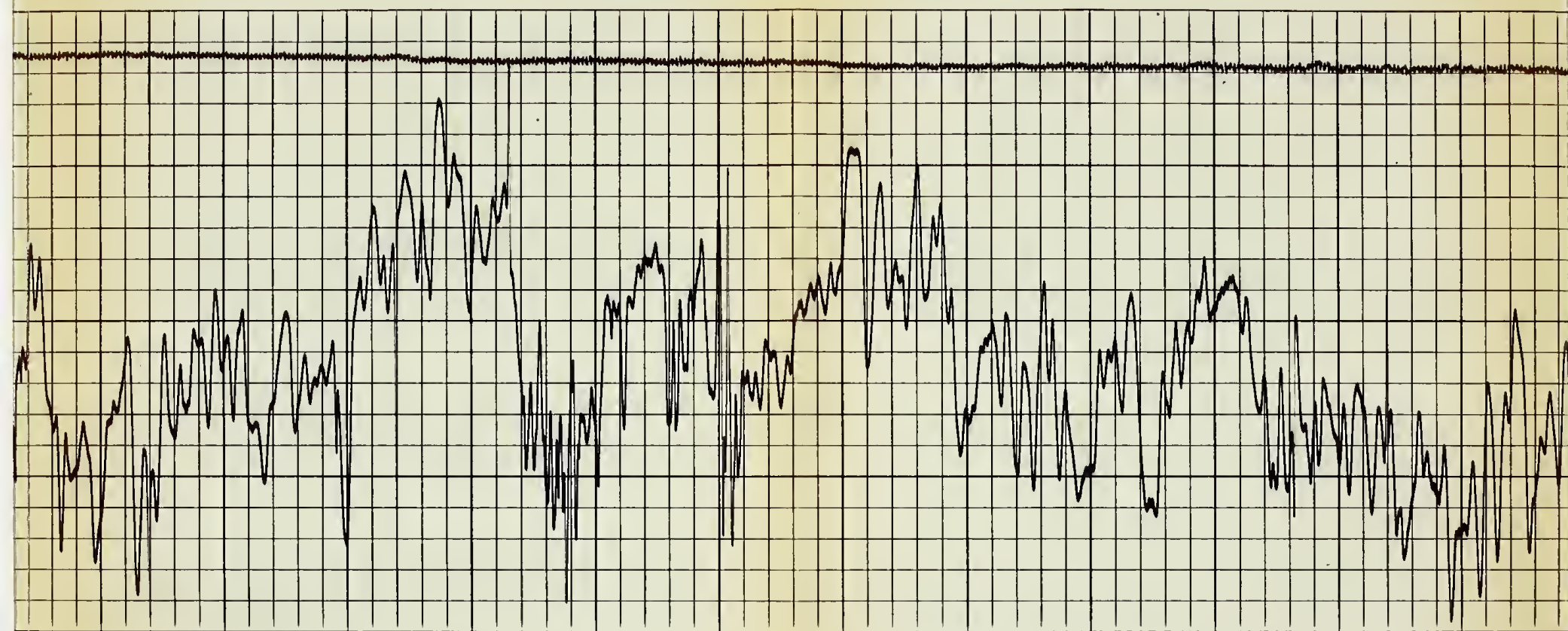
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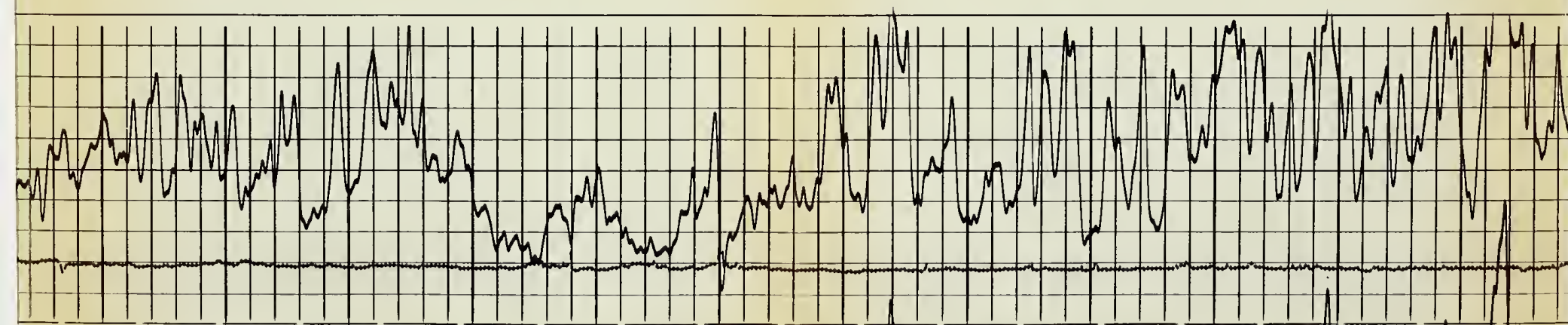
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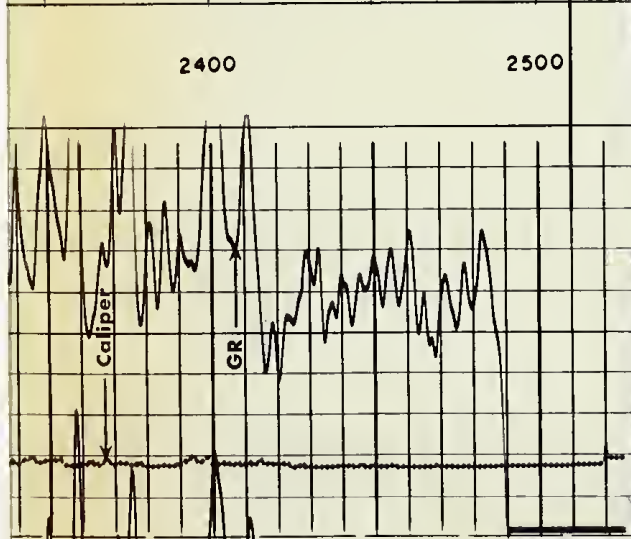
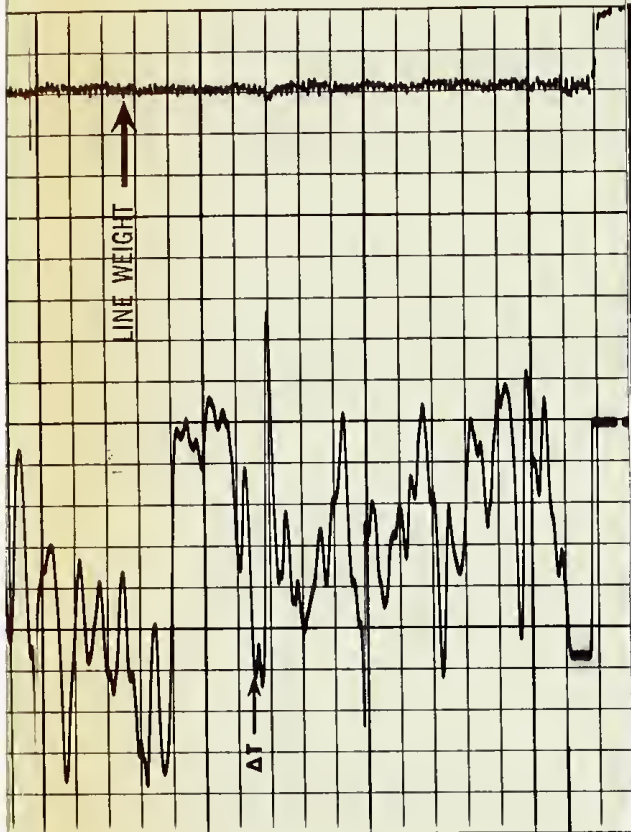
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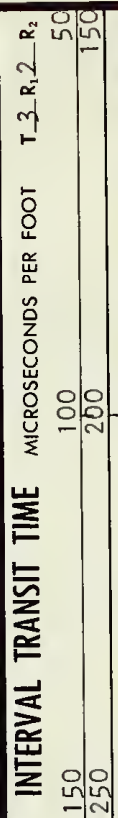




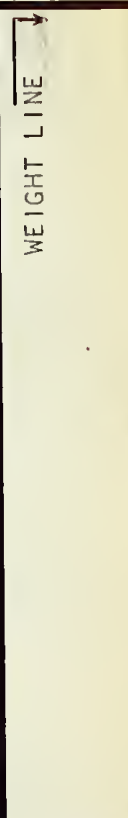
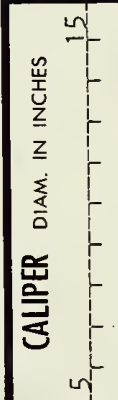


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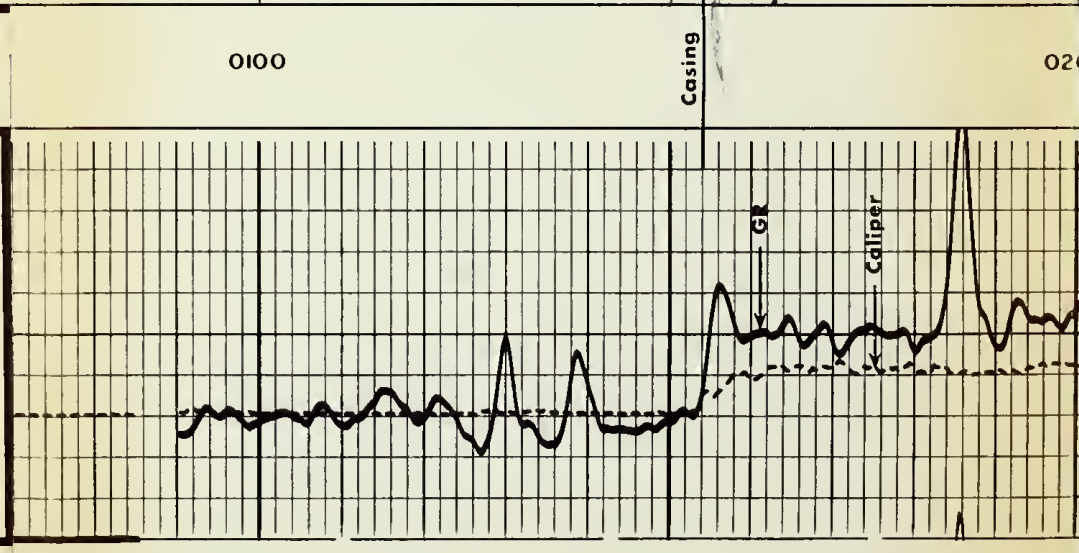
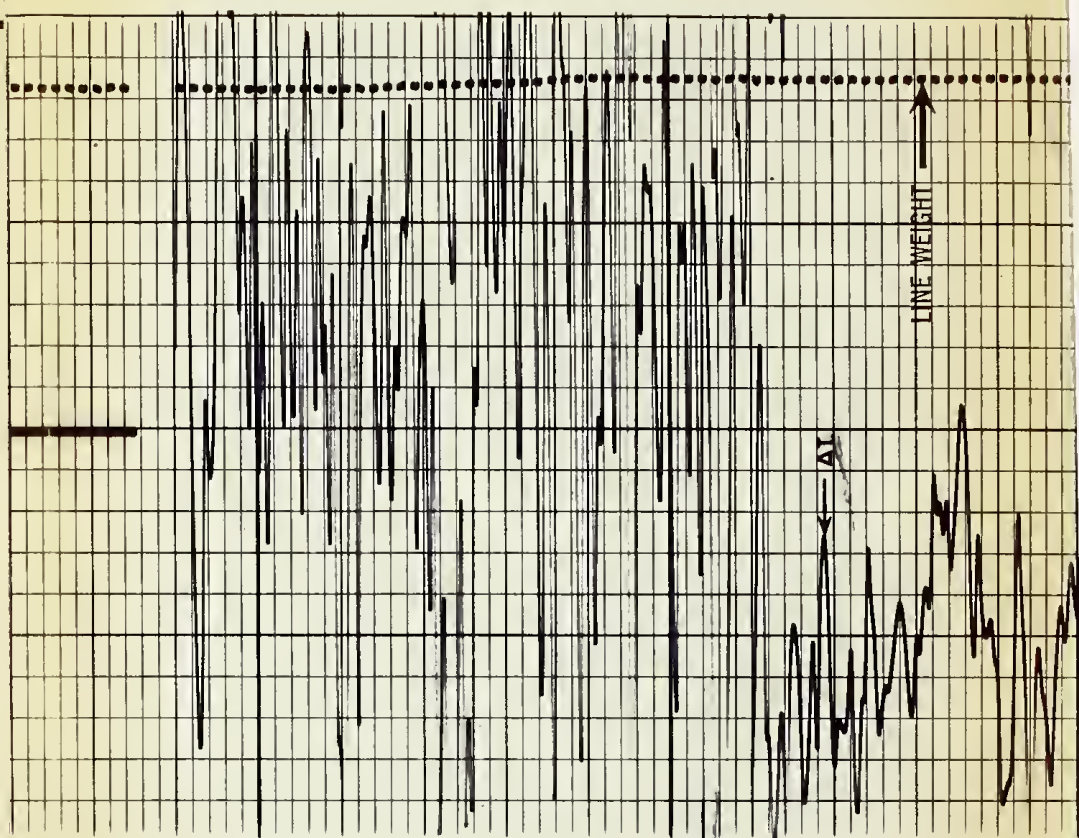
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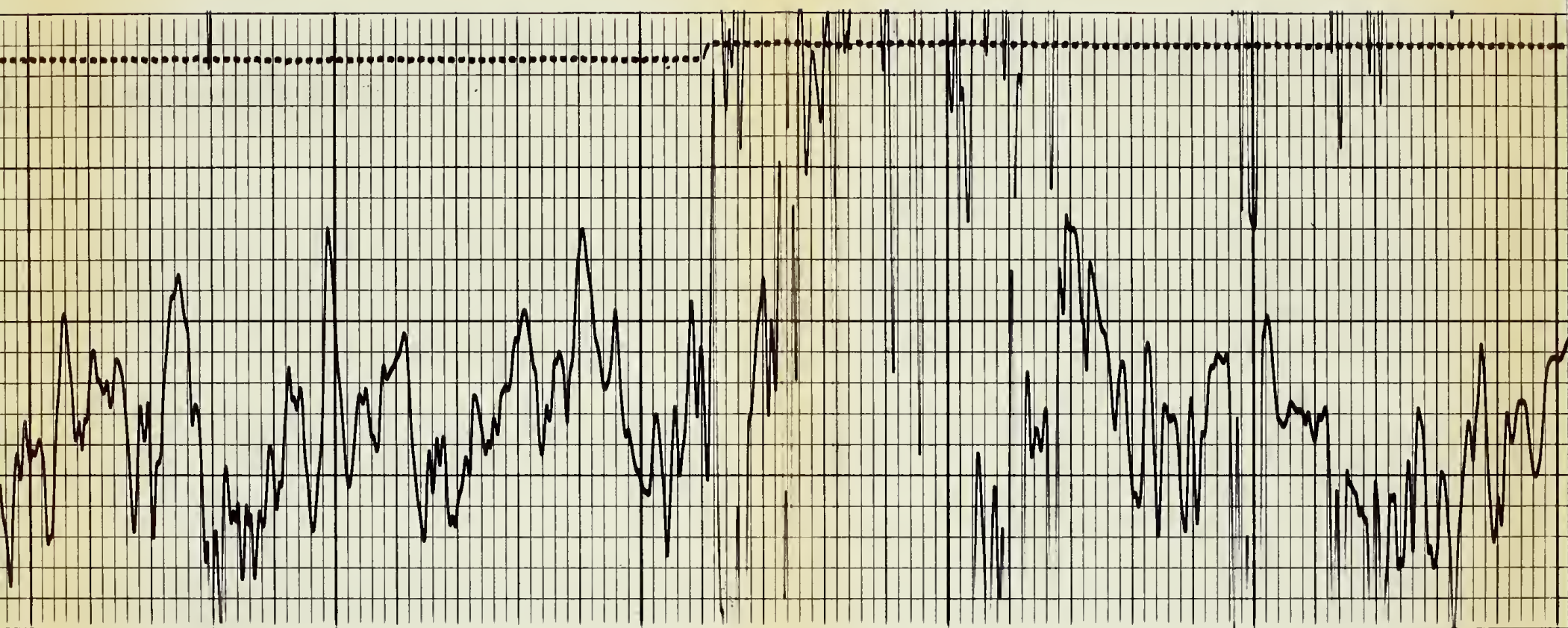


DEPTH



WEIGHT LINE

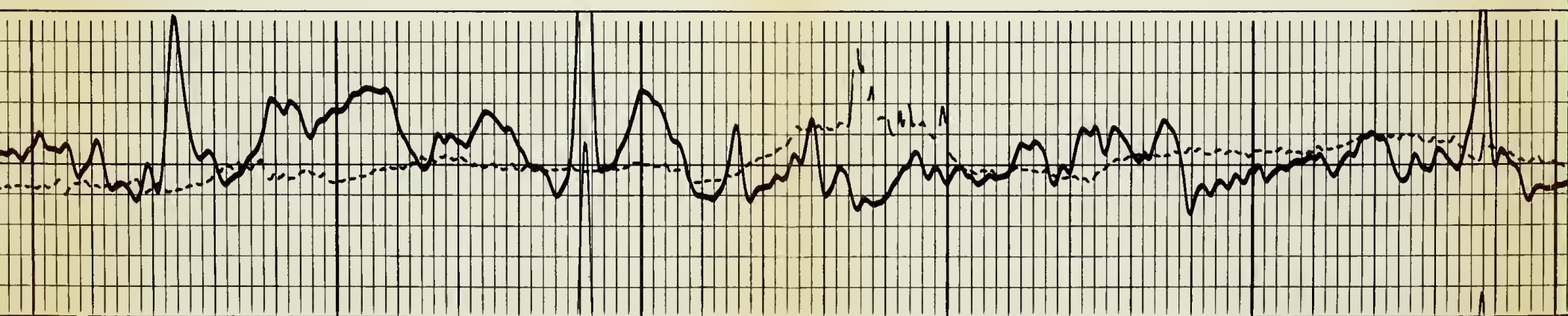




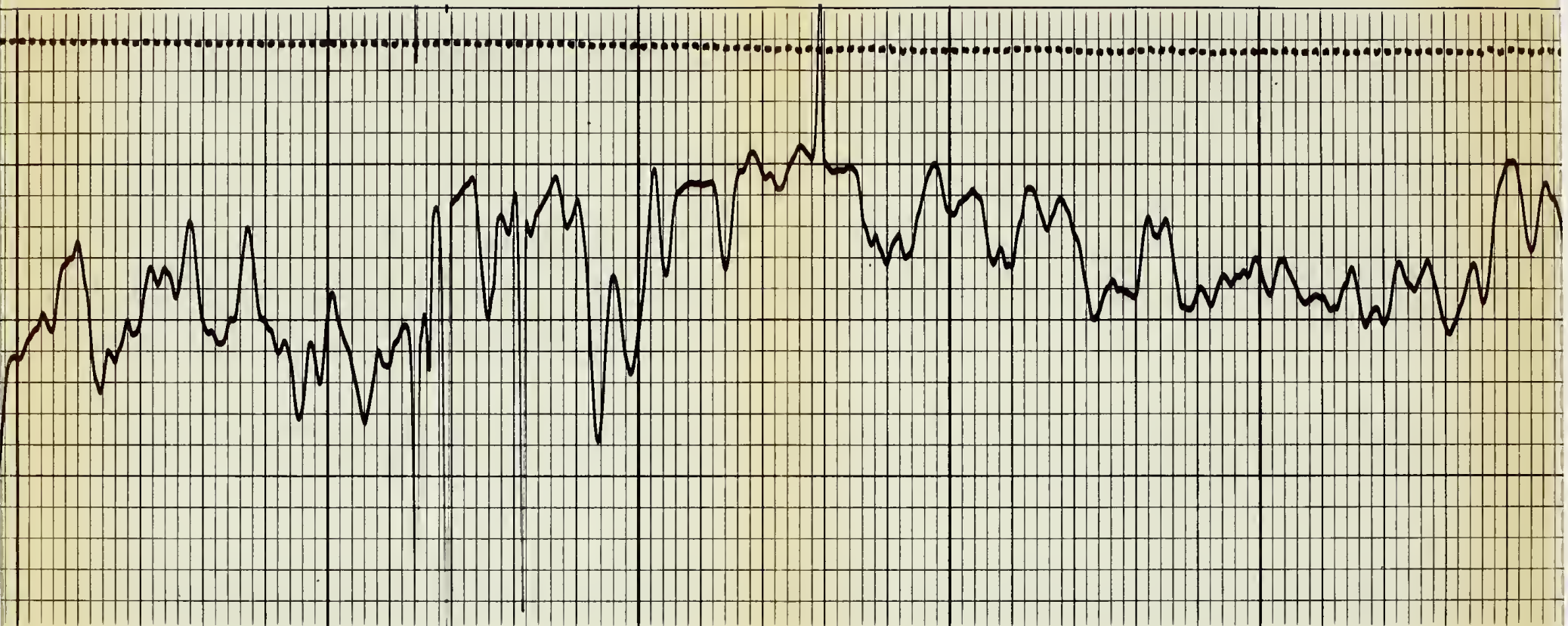
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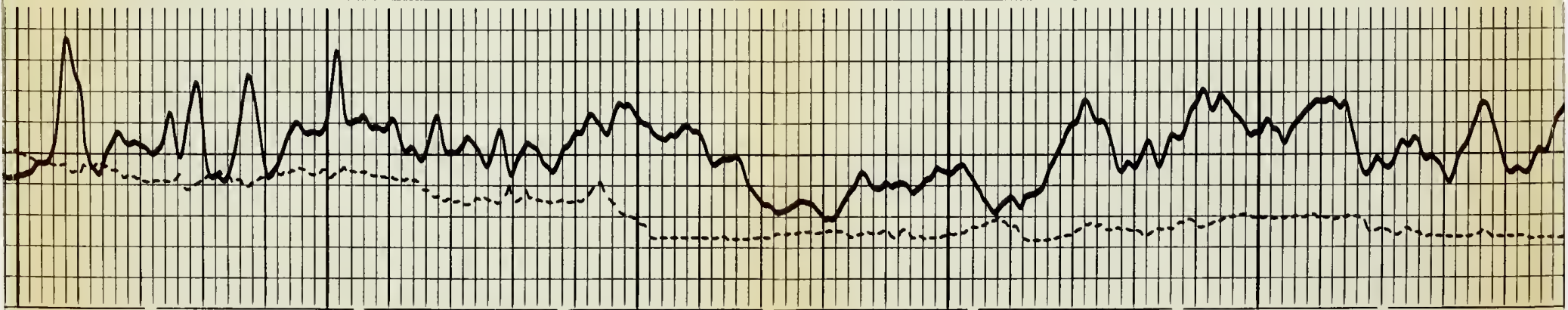




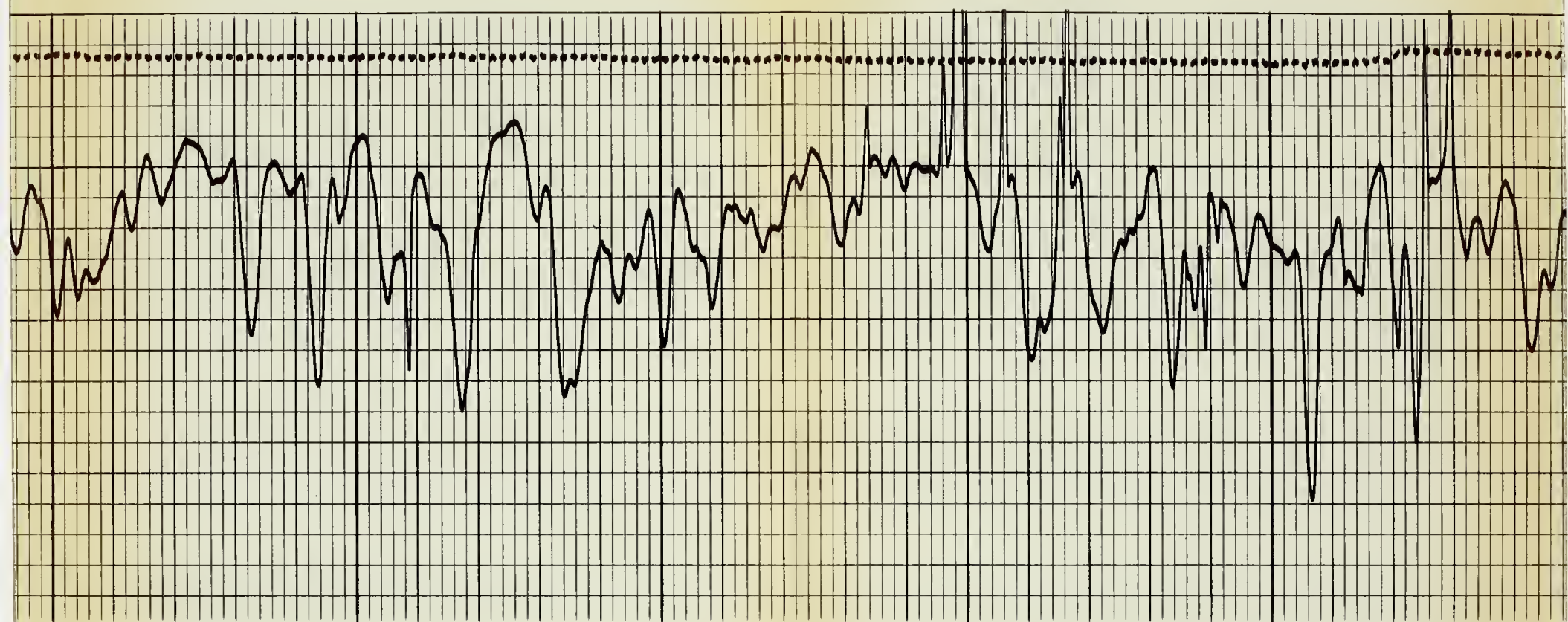
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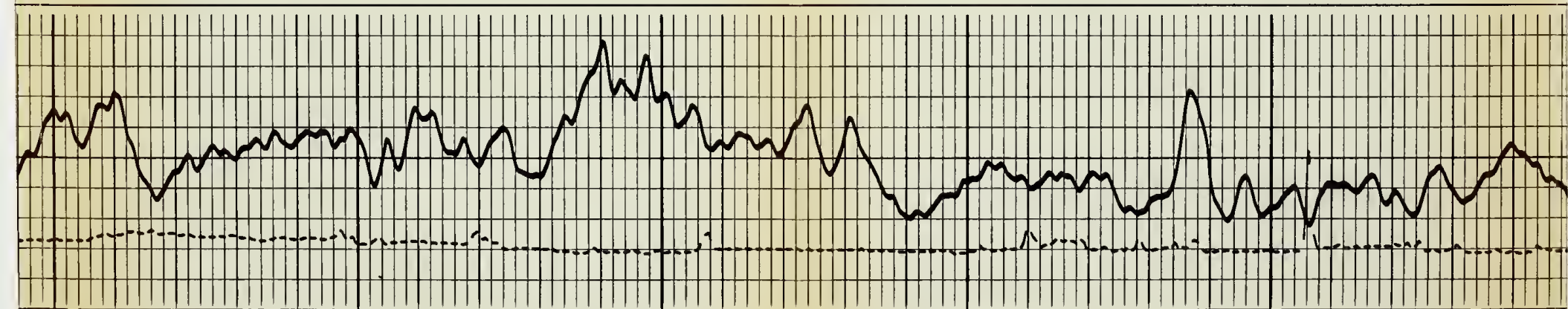


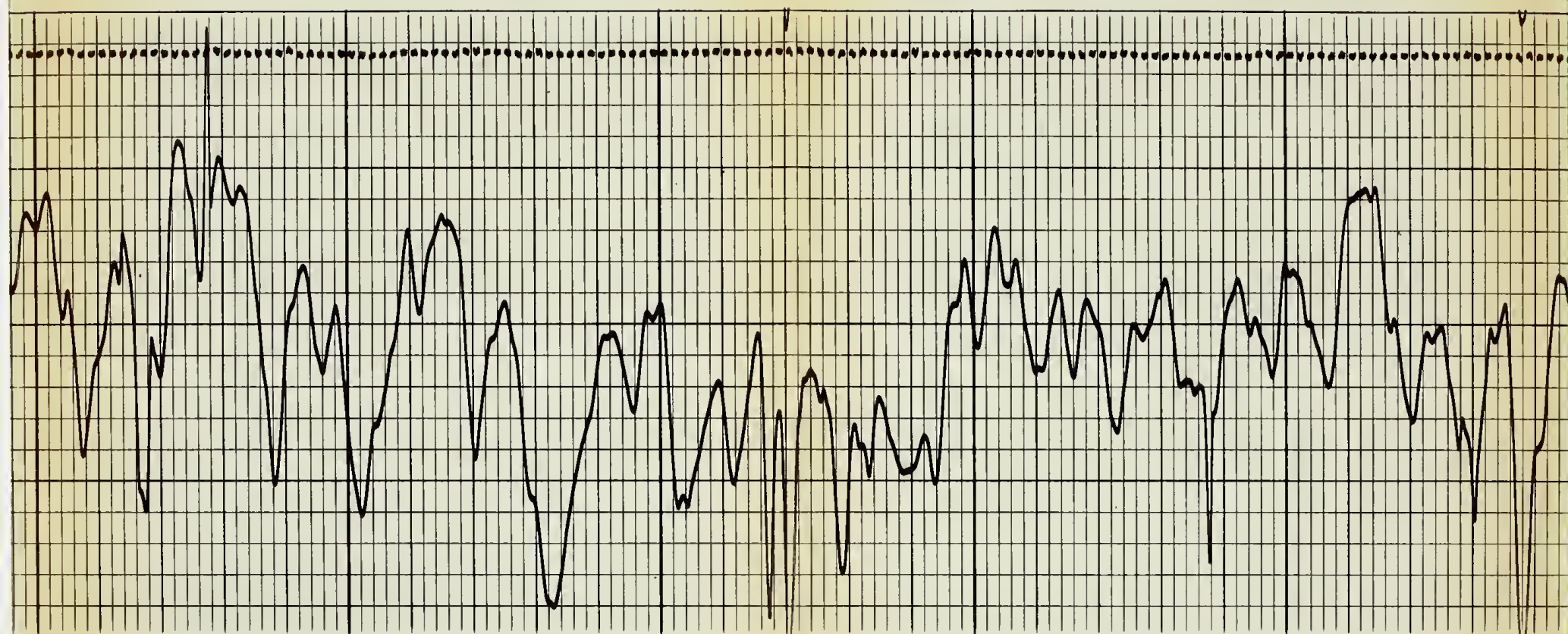


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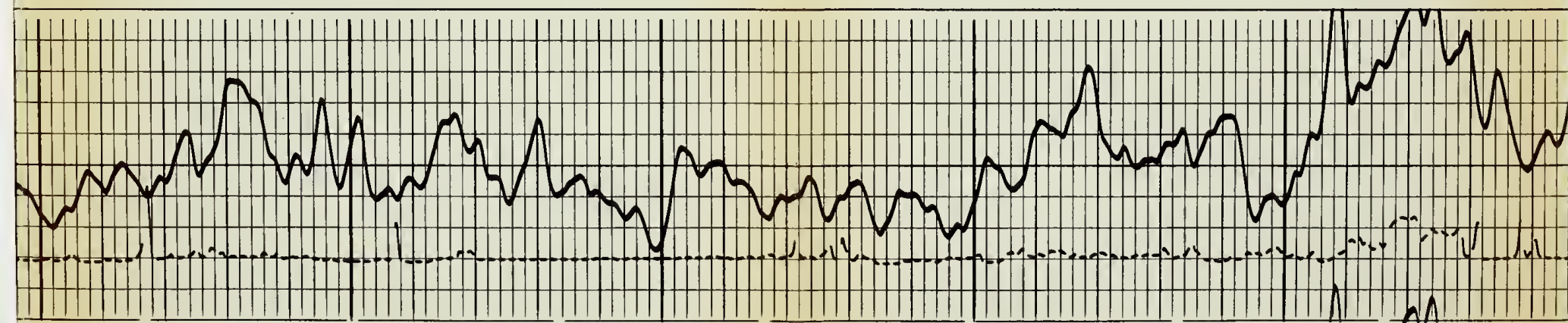
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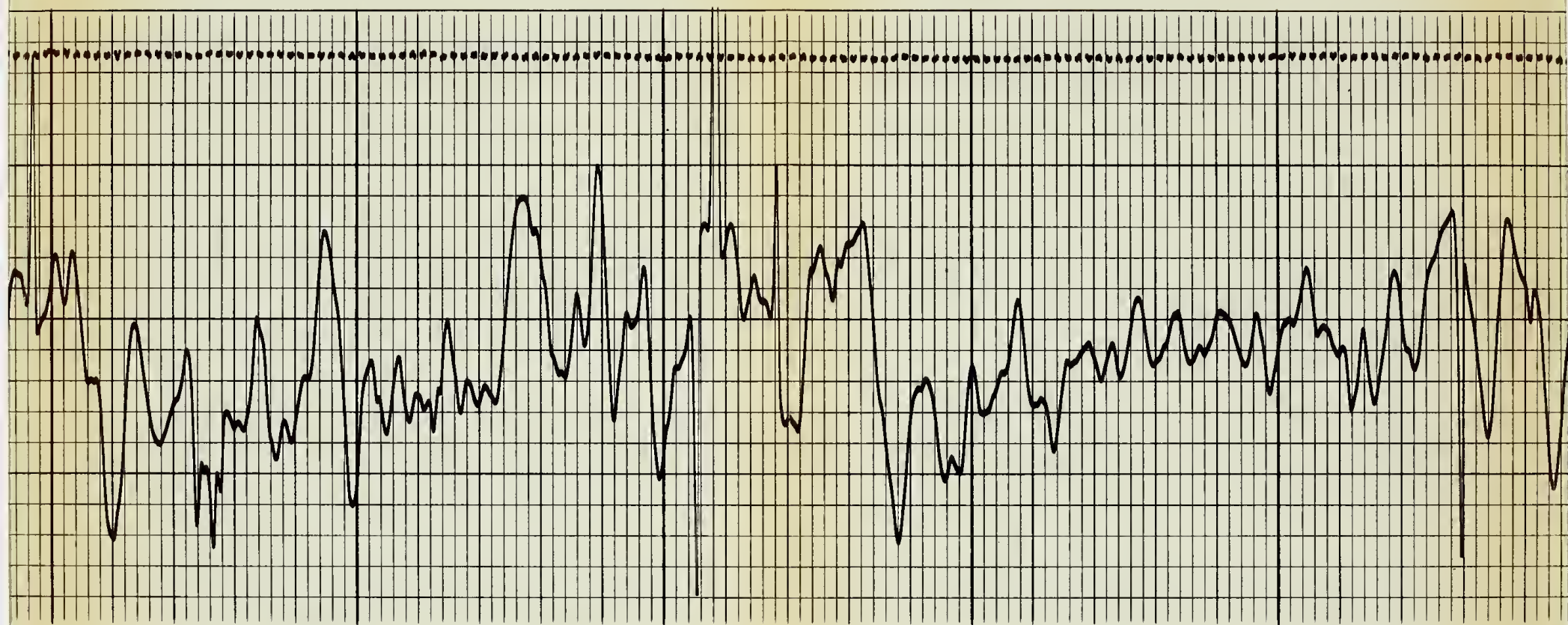


1000

1100



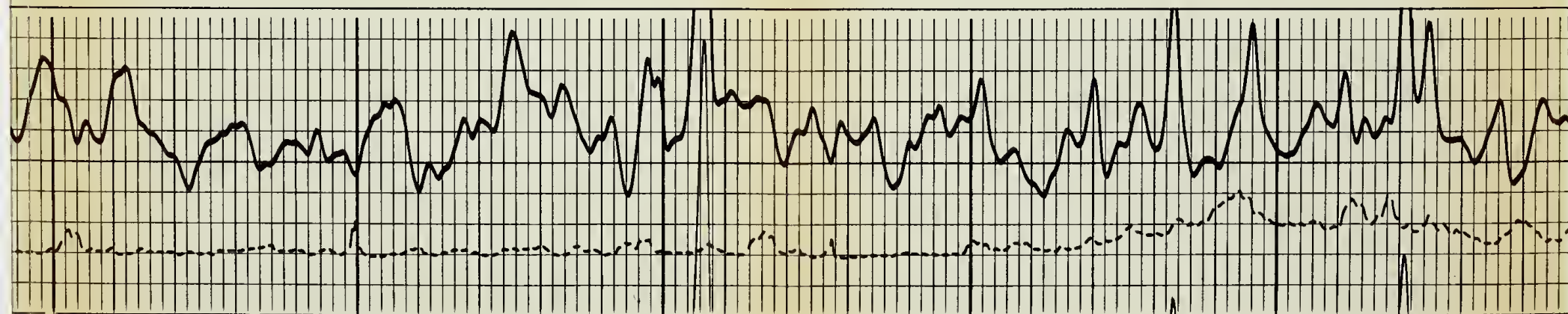




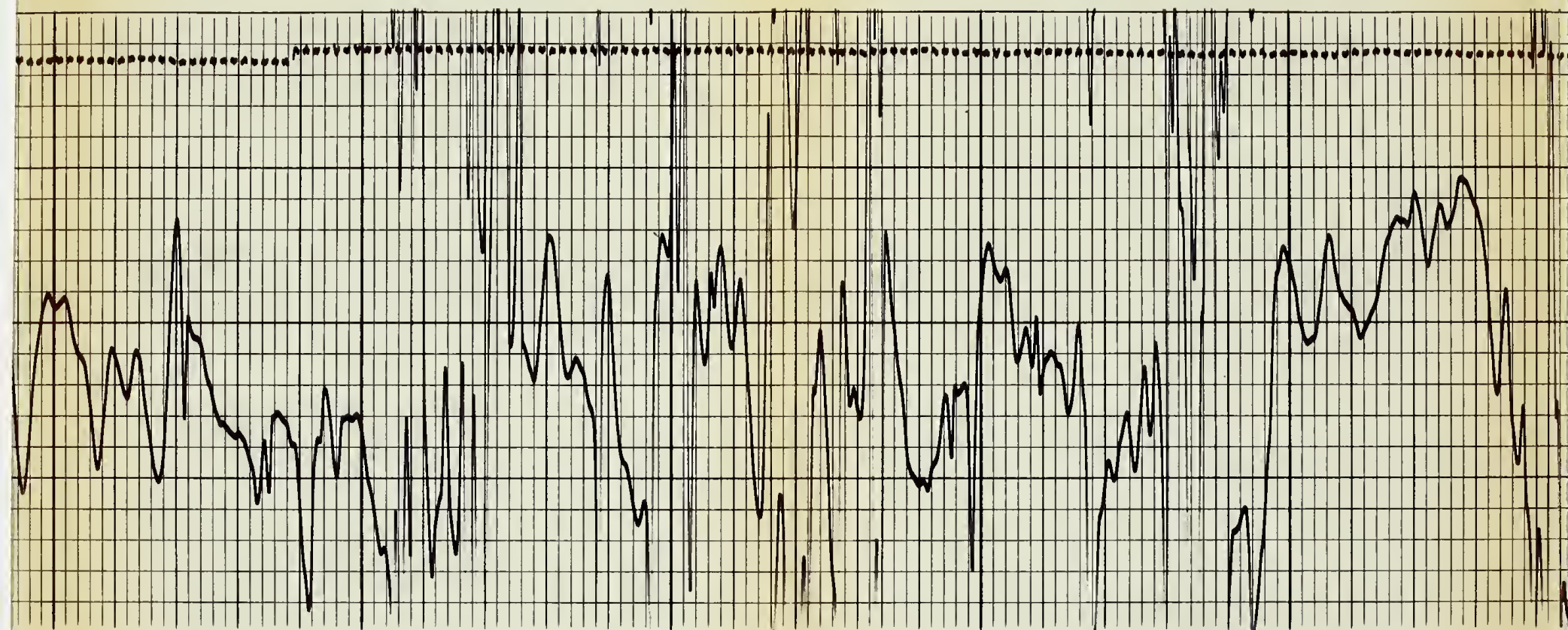
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1300

1400

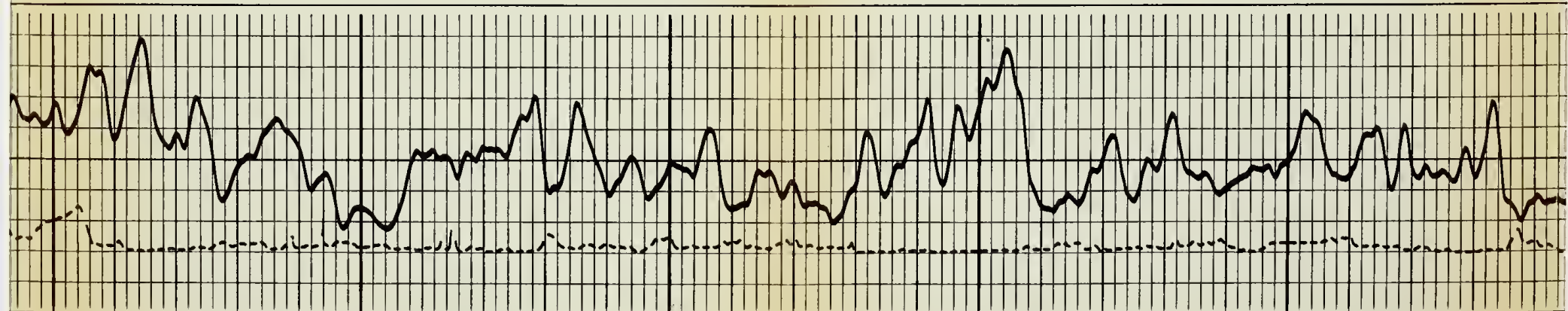


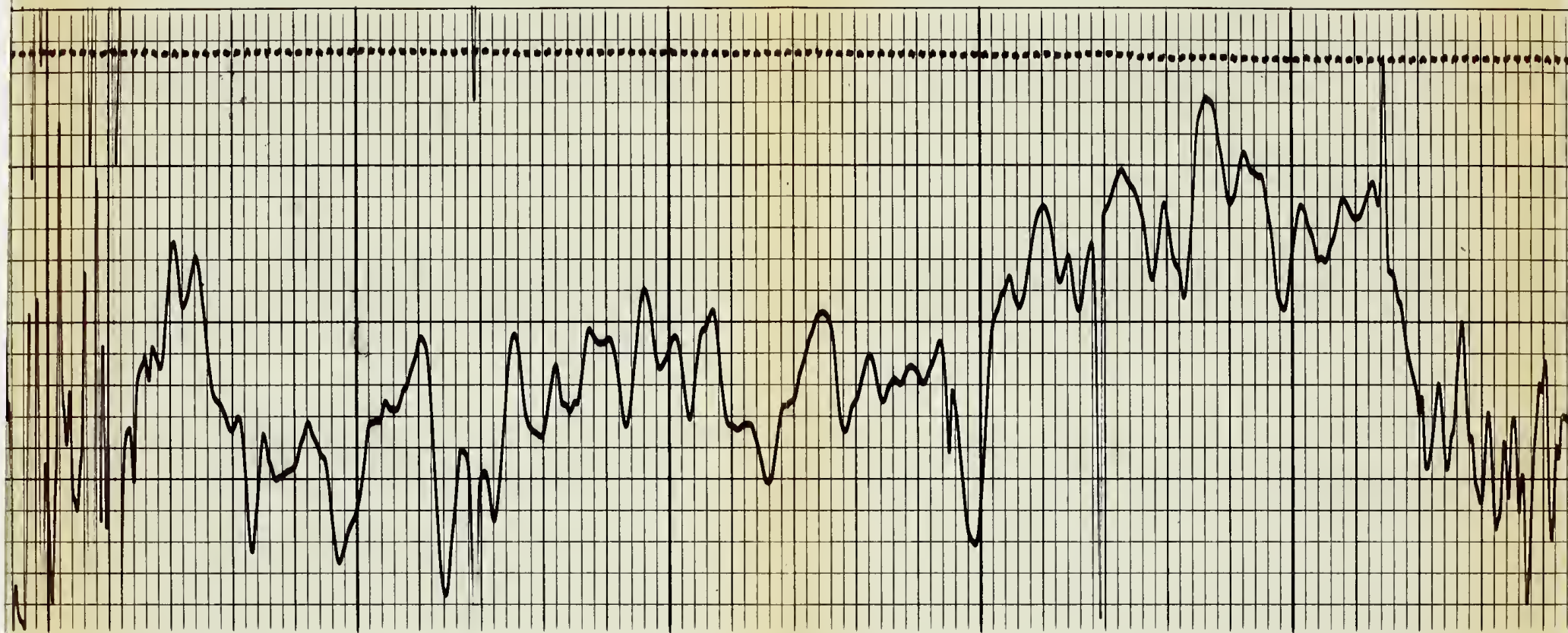




1500

1600

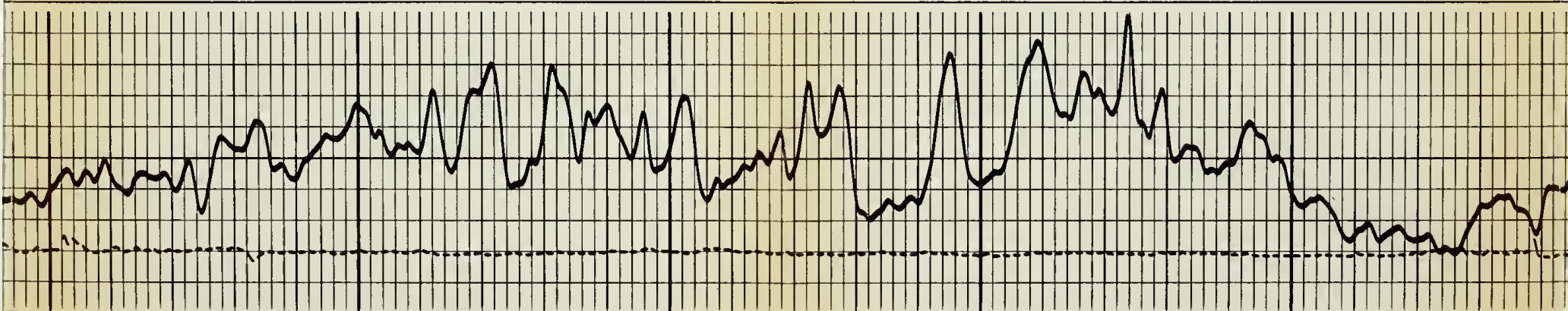




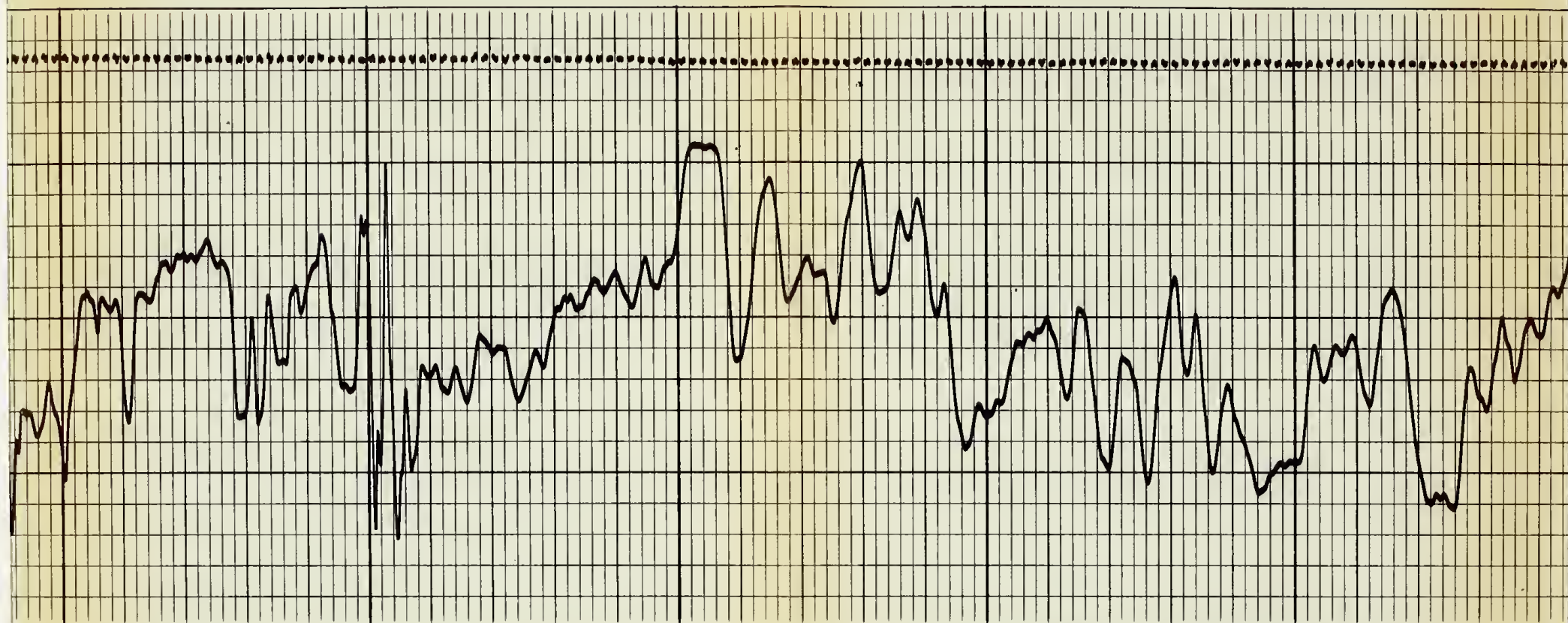
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1800

1900

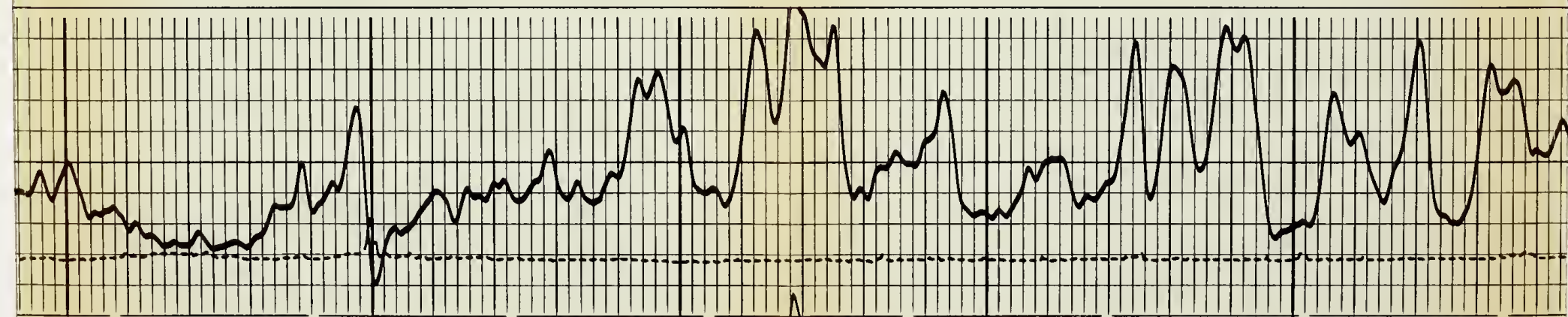




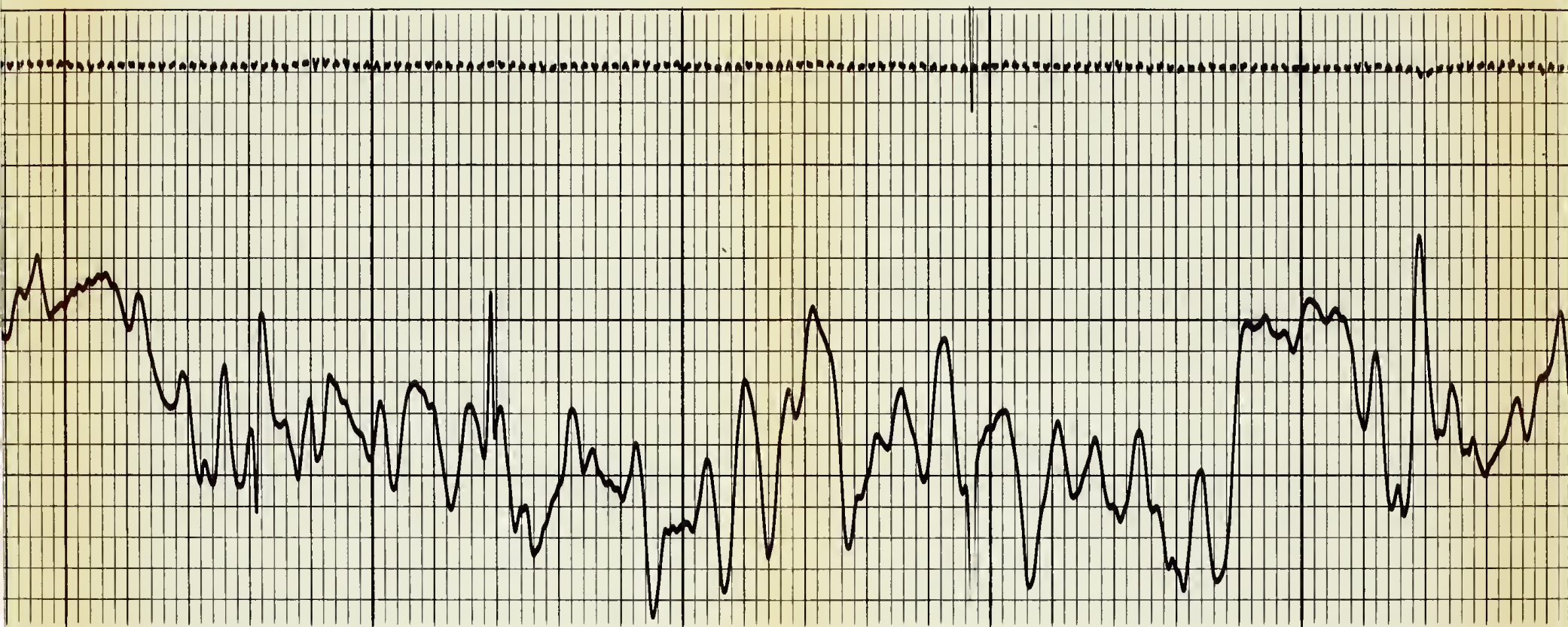


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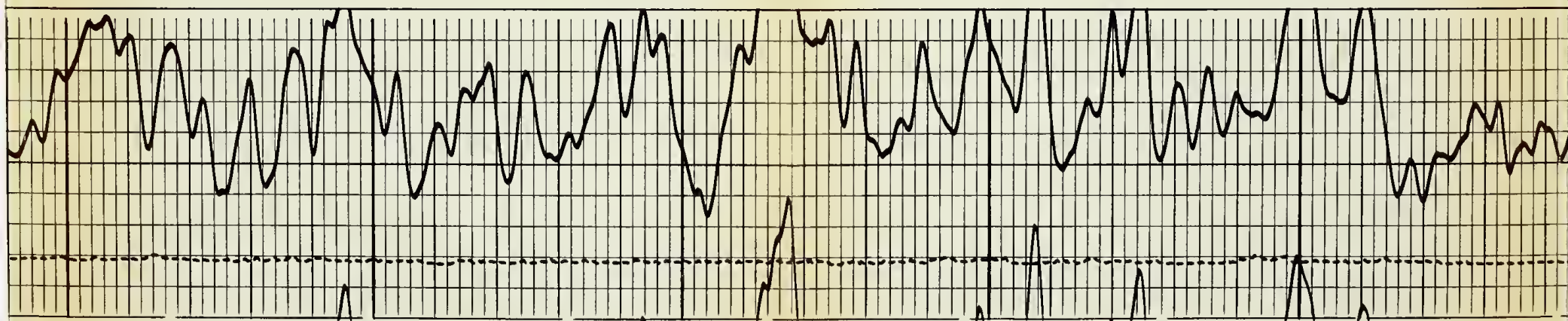


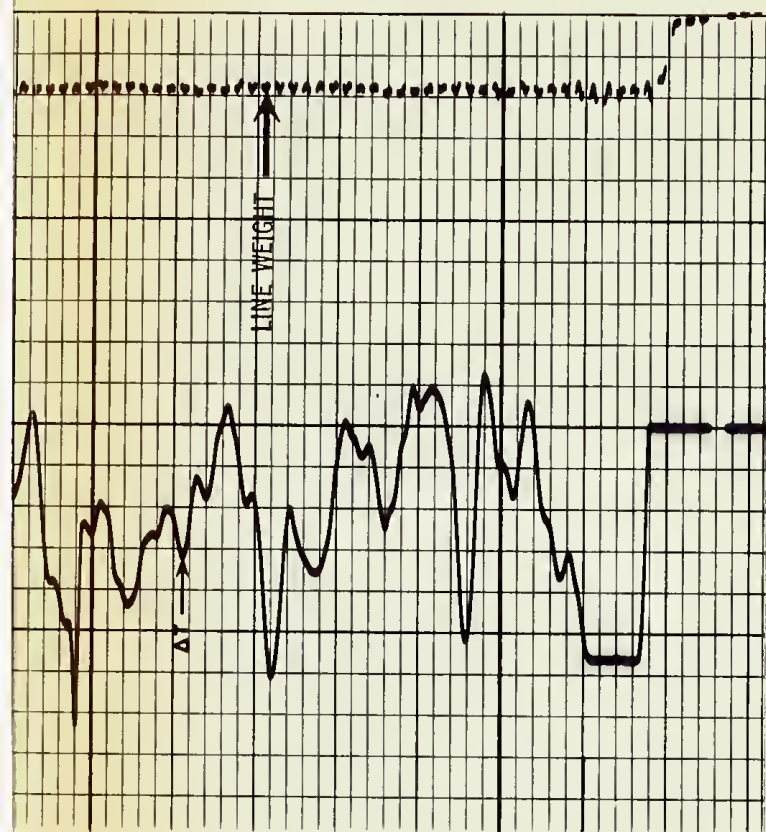


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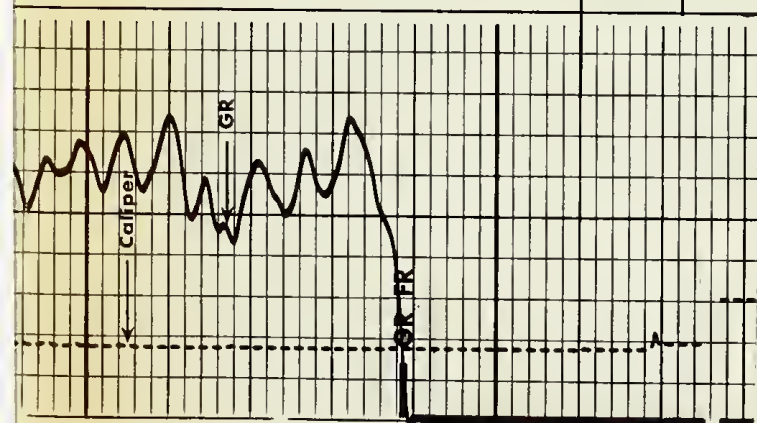
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2400



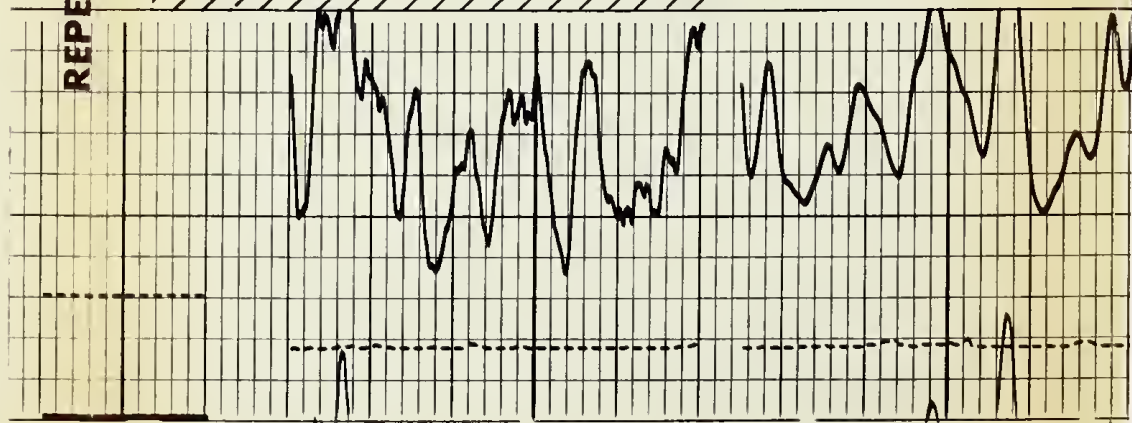


2500



REPEAT SECTION

MEMORIZER OUT — CURVES INVALID





2400

2500

OR FR

GAMMA RAY

API UNITS

0 150 300

CALIPER

DIAM. IN INCHES

5 15

WEIGHT LINE

INTERVAL TRANSIT TIME

T<sub>3</sub> R<sub>1</sub> 2 R<sub>2</sub>

MICROSECONDS PER FOOT

150 250 100 200 50 150

CALIBRATION RECORD

CALIBRATION AFTER SURVEY

6

5

DEPTH

4

3

1

CALIBRATION BEFORE SURVEY

6

5

4

3

1

CALIPER CHECK IN CASING

10

9

8

G. R. SURFACE CALIBRATION



6

5

4

1

BOREHOLE COMPENSATED SONIC CALIBRATION CODING

1. MECHANICAL ZERO
2. 40  $\mu$  SEC/FT
3. 60  $\mu$  SEC/FT
4. 80  $\mu$  SEC/FT
5. 100  $\mu$  SEC/FT
6. 140  $\mu$  SEC/FT

GAMMA RAY CALIBRATION CODING

1. MECHANICAL ZERO
2. ELECTRICAL ZERO
3. RECORDER SENSITIVITY
4. MEMORIZER ADJUSTMENT
5. BACKGROUND
6. CALIBRATION

**CALIBRATION RECORD**

COMPANY ATLANTIC RICHFIELD COMPANY SCHL. FR 2510  
 WELL SORGHUM GULCH #1 SCHL. TD 2522  
 FIELD SORGHUM GULCH DRLR TD 2525  
 COUNTY RIO BLANCO STATE COLORADO Elev: KB 6436.5  
 DF 6435.5  
 GL 6428

SG-1

Schlumberger

AMPLITUDE VARIABLE DENSITY

## SONIC LOG - GAMMA RAY

(WITH CALIPER)

COUNTY RIO BLANCO  
 FIELD or LOCATION SORGHUM GULCH  
 WELL SORGHUM GULCH NO. 1  
 COMPANY ATLANTIC RICHFIELD

COMPANY ATLANTIC RICHFIELD COMPANYWELL SORGHUM GULCH NO. 1FIELD SORGHUM GULCHCOUNTY RIO BLANCO STATE COLORADOLocation: API Serial No. 1946' FEL & 1314' FSLSec. 2 Twp. 3S Rge. 97WOther Services:  
LL-7  
BHC-GR  
FDC-GR

Permanent Datum: GL; Elev.: 6428  
 Lag Measured From GL, 0 Ft. Above Perm. Datum  
 Drilling Measured From GL

Elev.: K.B. 6430.5  
 D.F. 6435.5  
 G.I. 6428

Date	12-7-74				
Run No.	ONE				
Depth-Driller	2525				
Depth-Logger	2522				
Btm. Lag Interval	2510				
Top Lag Interval	154				
Casing-Driller	8 5/8 @ 154	@	@	@	@
Casing-Logger	154				
Bit Size	6-3/4				
Type Fluid in Hole	FRESH WATER				
Fluid Level	FULL				
Dens.	8.0				
pH					
Fluid Loss	-	ml	ml	ml	ml
Source of Sample	CIRCULATED				
Rm @ Meas. Temp.	3.9 @ 64 °F	@	°F	@	°F
Rmf @ Meas. Temp.	- @ °F	@	°F	@	°F
Rmc @ Meas. Temp.	- @ °F	@	°F	@	°F
Source: Rmf					
Rm @ BHT	2.2 @ 119 °F	@	°F	@	°F
Time Since Circ.	7 HOURS				
Max. Rec. Temp.	119 °F		°F		°F
Equip. Location	7683 VRNL				
Recorded By	YATCHAK/ETTER				
Witnessed By	BURNS				

The well name, location and borehole reference data were furnished by the customer.

FOLD HERE

## CHANGES IN MUD TYPE OR ADDITIONAL SAMPLES

## SCALE CHANGES

Date	Sample No.	Depth	Type Lag	Scale Up Hole	Scale Down Hole
Depth - Driller					
Type Fluid in Hole					
Dens.					
ph					
Fluid Loss					
Source of Sample					
Rm @ Meas. Temp.					
Rmf @ Meas. Temp.					
Rmc @ Meas. Temp.					
Source: Rmf					
Rm @ BHT					
Rmf @ BHT					
Rmc @ BHT					

## REMARKS

Service Order No. - 6929

T<sub>0</sub> = 100T<sub>x</sub> = 1

CART GAIN = 1/20

5' SPACING - AMP &amp; VDL

SIGNAL LEVEL VERY LOW AND AMPLITUDE

JUMPING FROM E<sub>7</sub> DETECTION

RECORDER CUT-OFF MZ OF AMP.

GR CAL. ON BHC LOG

## EQUIPMENT DATA

Run No.	ONE
Sonic Panel No.	110
Sonic Cart No.	136
Sonic Sande No.	163
Mem. Panel No.	166
G.R. Cart No.	204
G.R. Panel No.	166
Caliper No.	929
TTR No.	-
Cent. Device	YES
Stand off - Inches	3/4 & BOWSPRING + VCD
Time Const. - Sec.	2
Speed - F.P.M.	30





CALIBRATION DATA

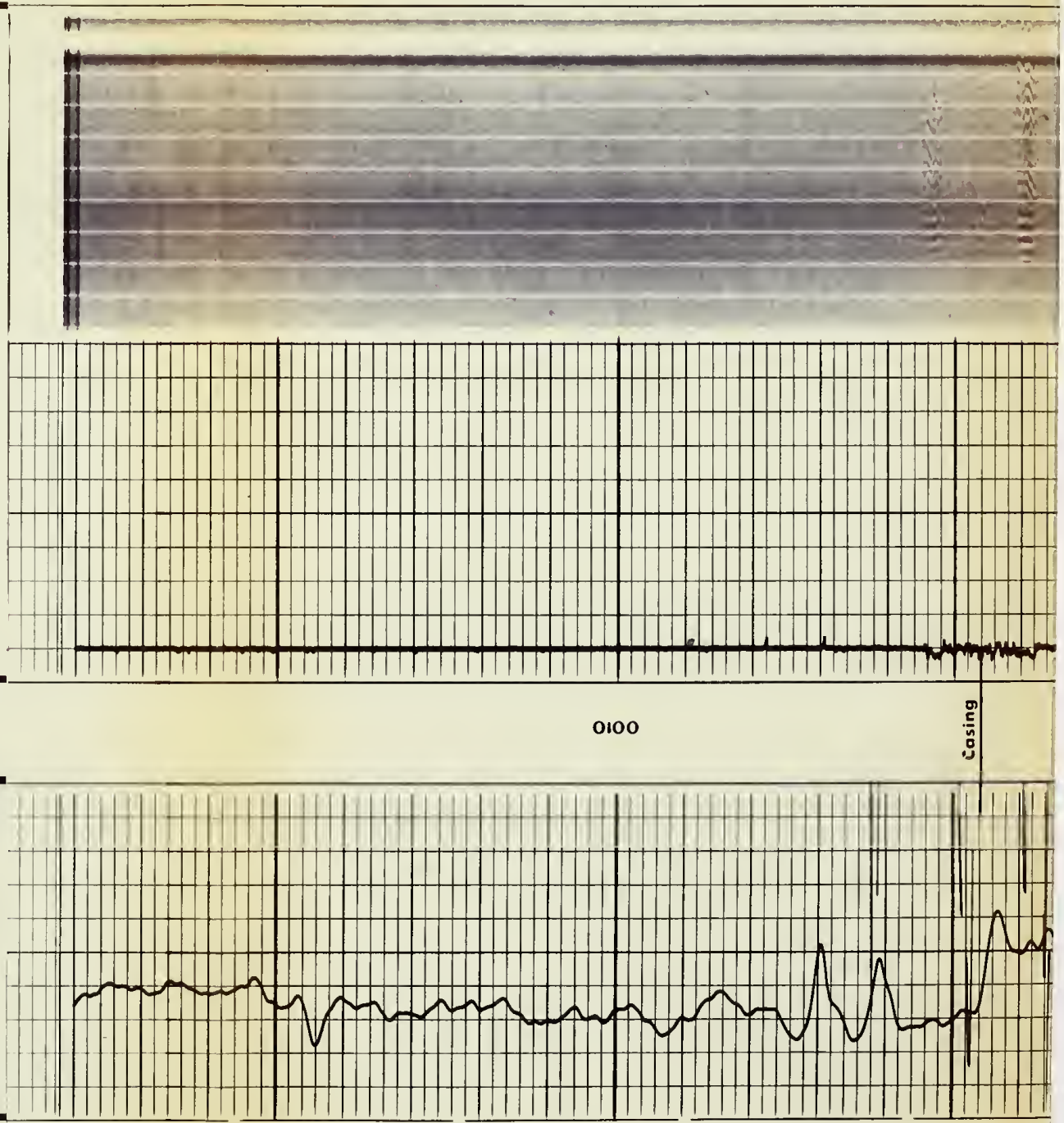
CALIBRATION:	BACKGND.	SOURCE	GALV. INCR.	SENS. TAP	SENS. TAP	TIME
	CPS.	CPS.	DIVISION	(FOR CAL.)	(RECORD)	CONST.
GAMMA RAY:	70	290	10	0-165	0-150	2

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to Clause 7 of our General Terms and Conditions as set out in our current Price Schedule.

VS-2231

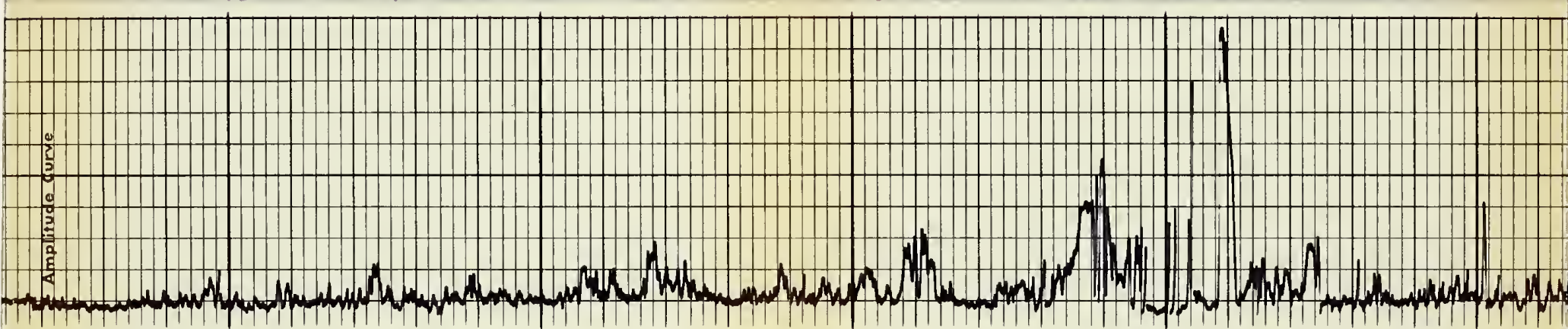
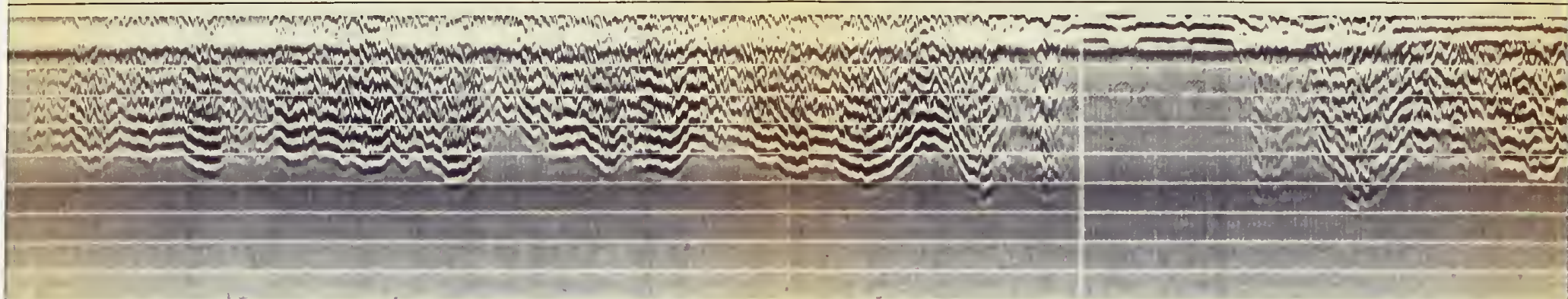
SINGLE RECEIVER $\Delta T$ microseconds	
600	400
800	600
GAMMA RAY API UNITS	
0	150
150	300

AMPLITUDE MILLIVOLTS	VARIABLE DENSITY MICROSECONDS
0	20
	200
	1200



0100

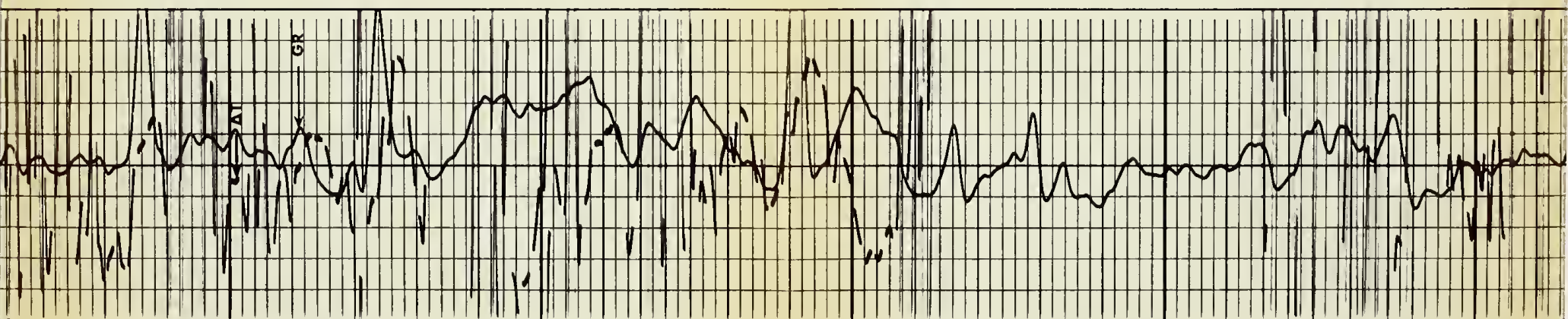
Casing



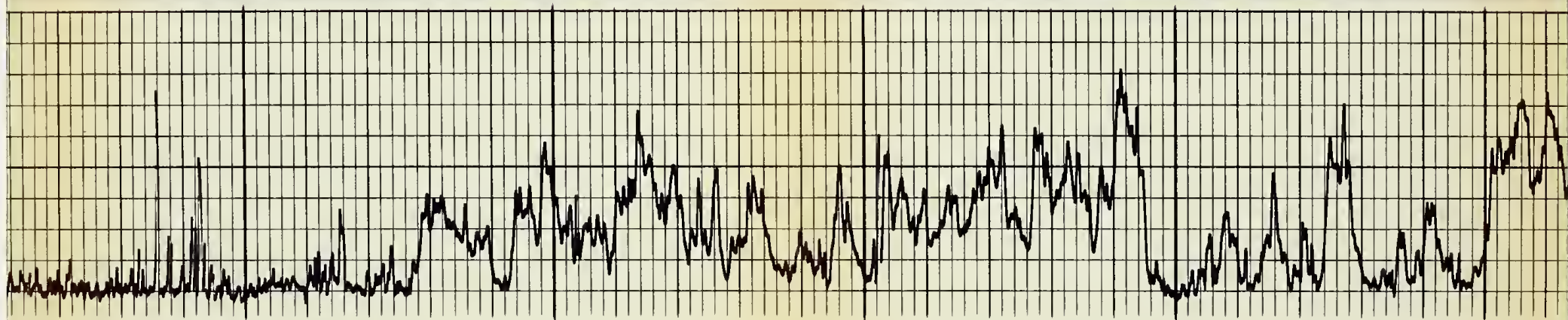
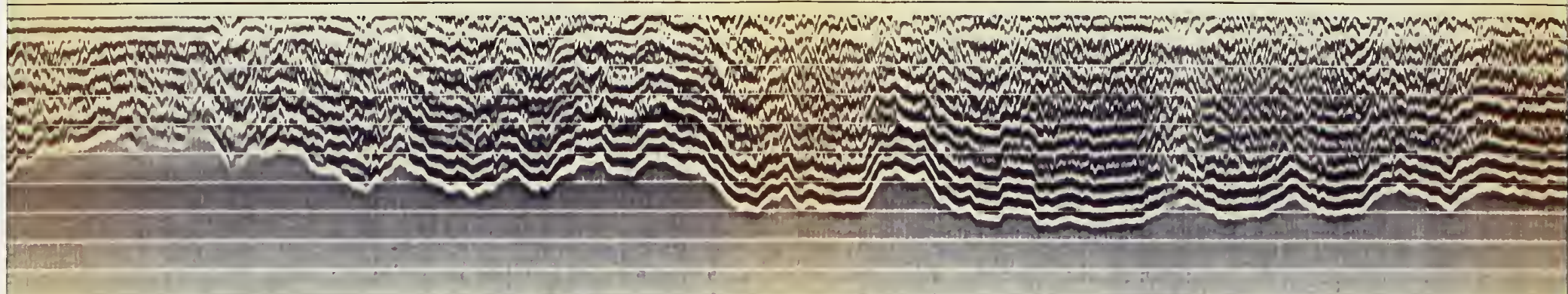
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0300

0400

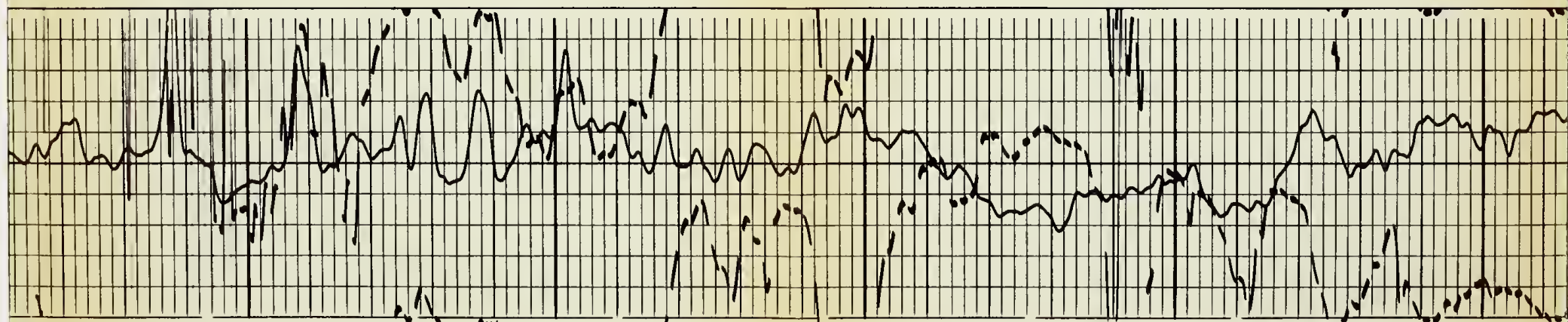




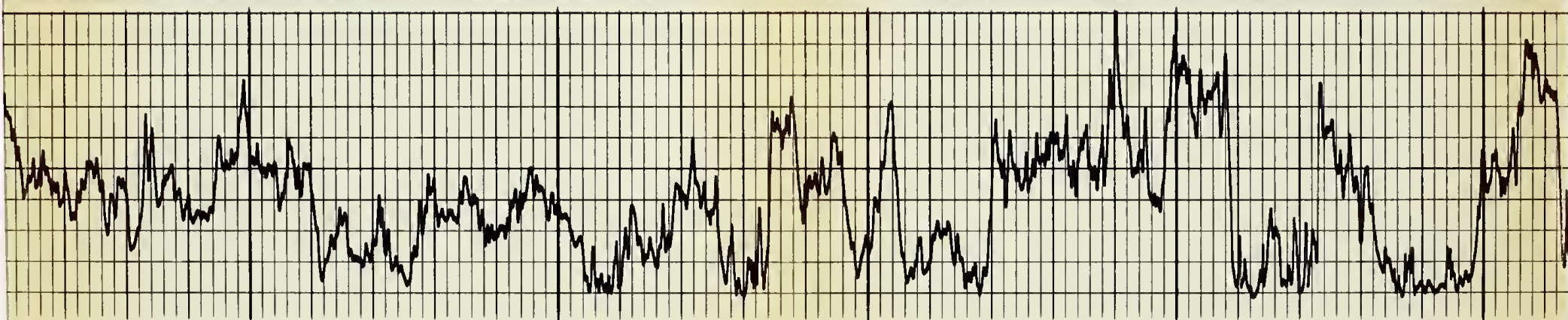
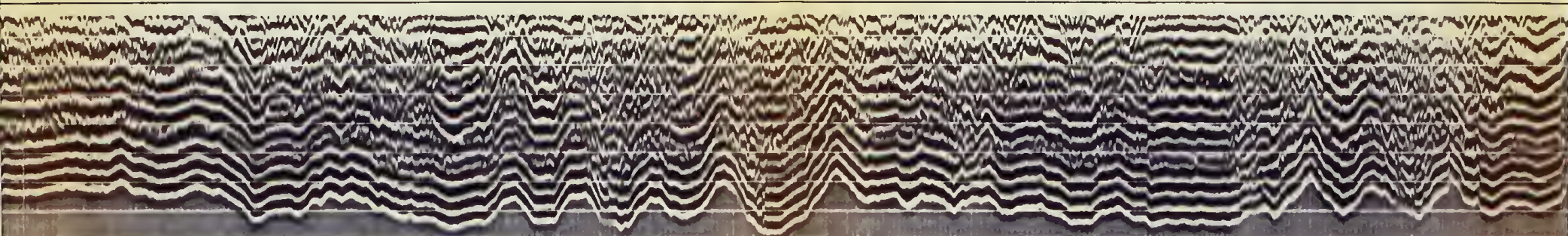


0500

0600



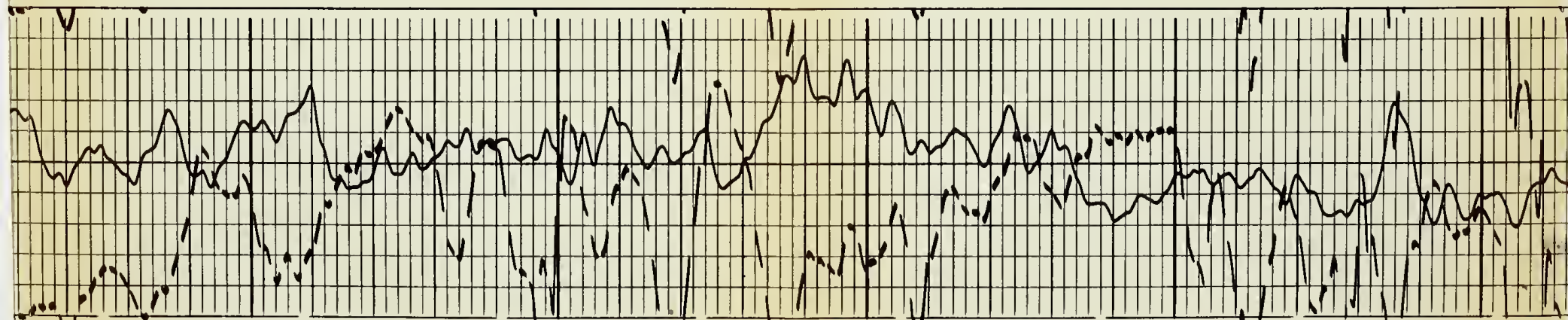




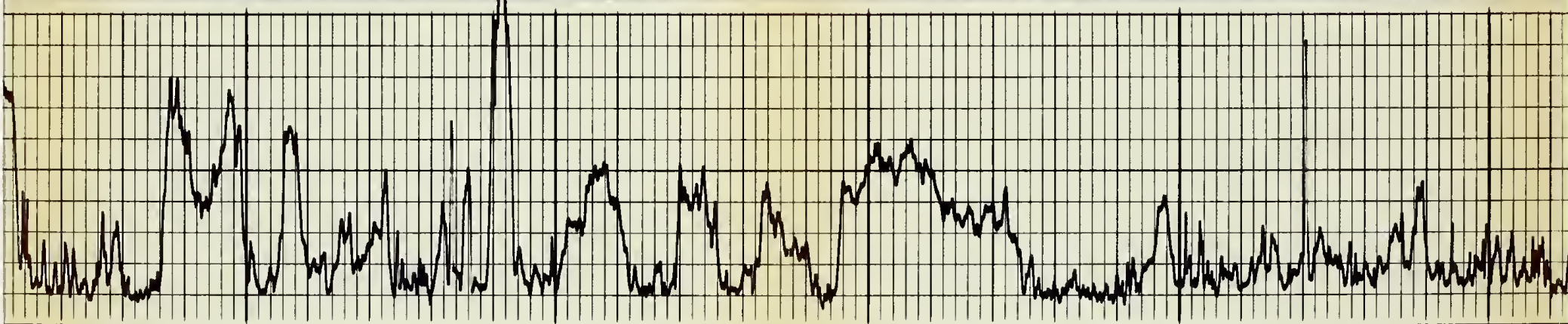
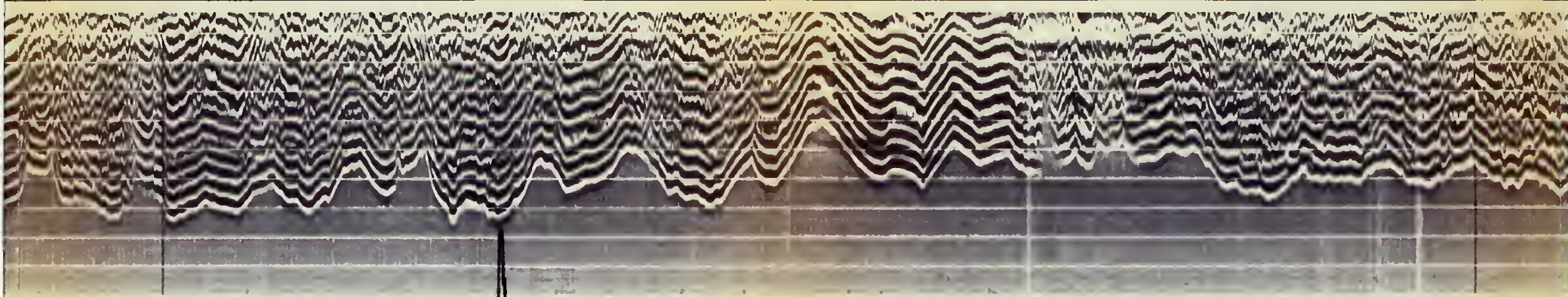
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0800

0900

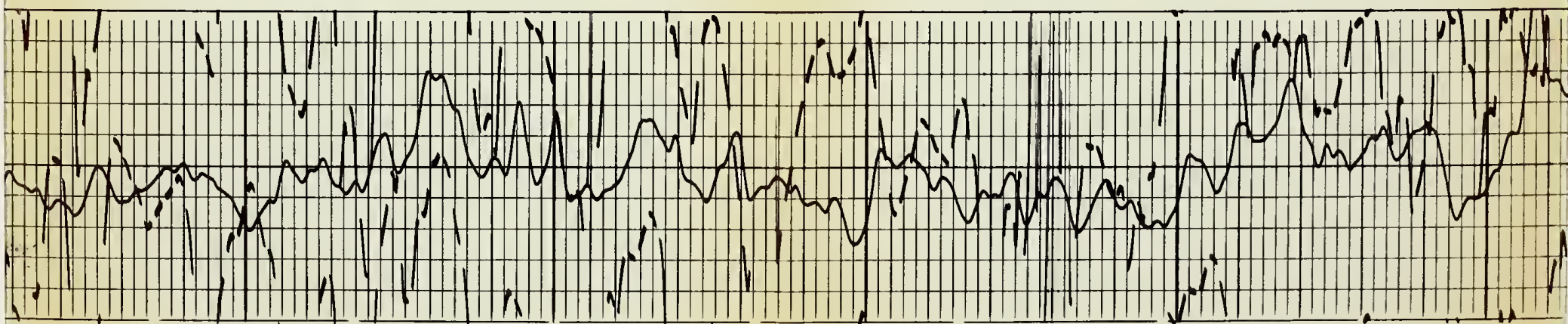




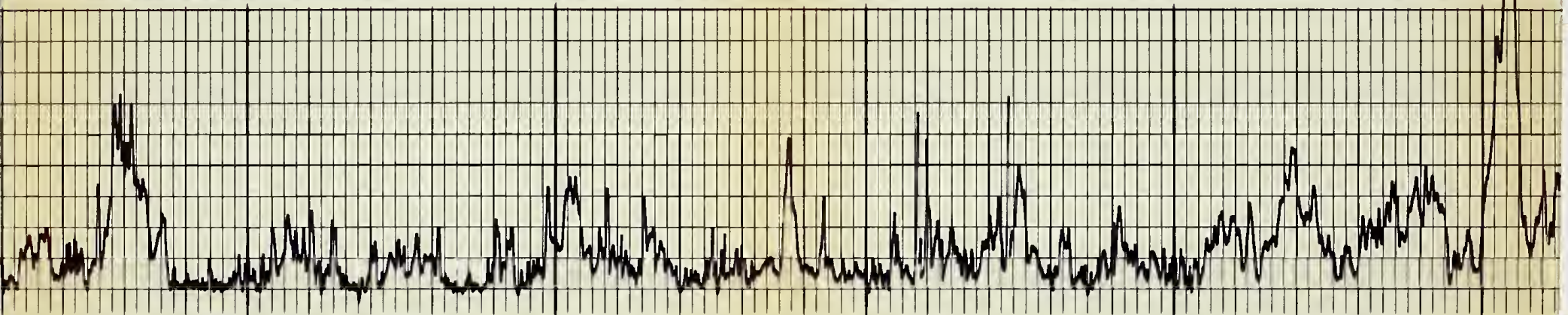
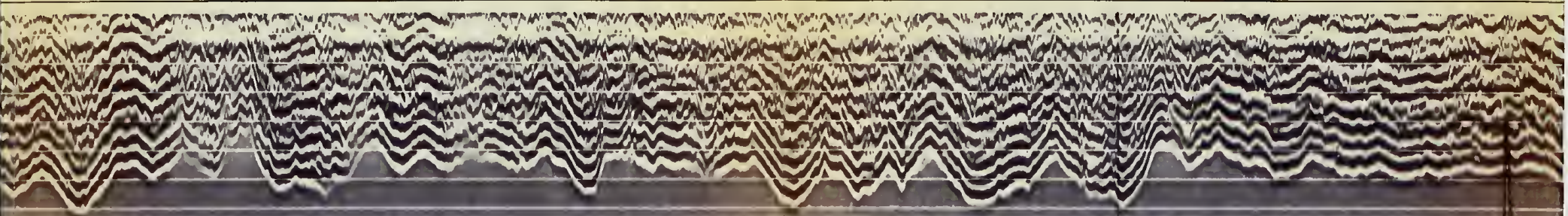


1000

1100



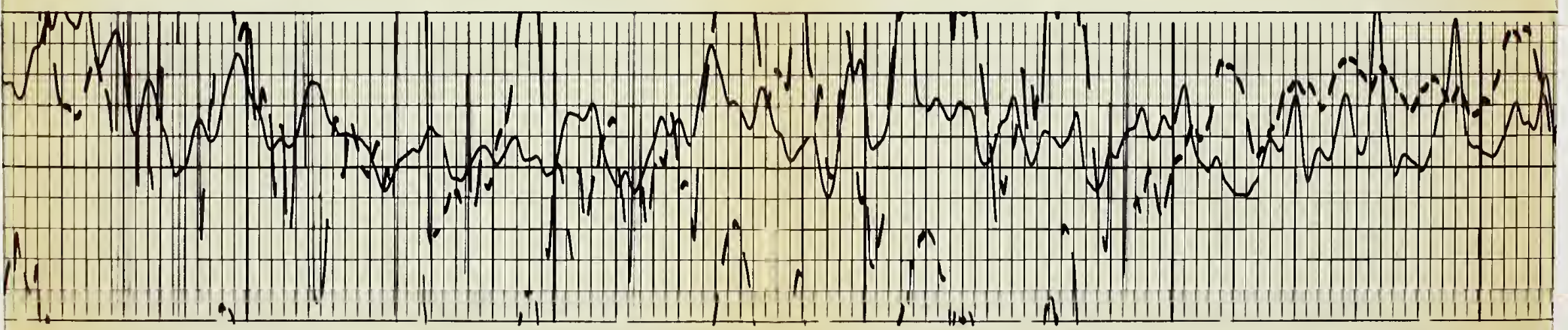




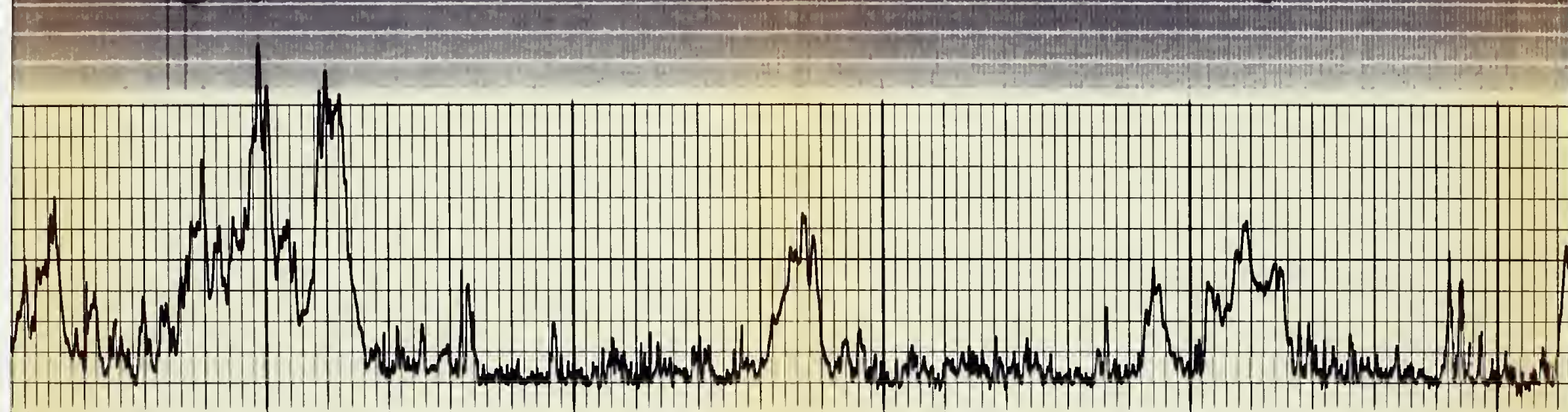
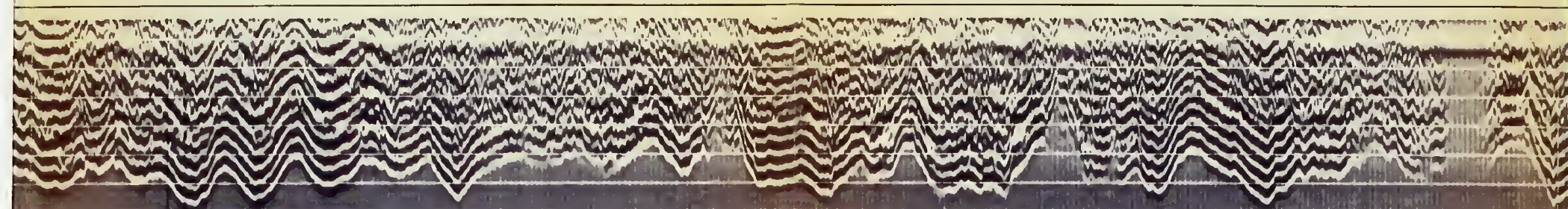
1200

1300

1400

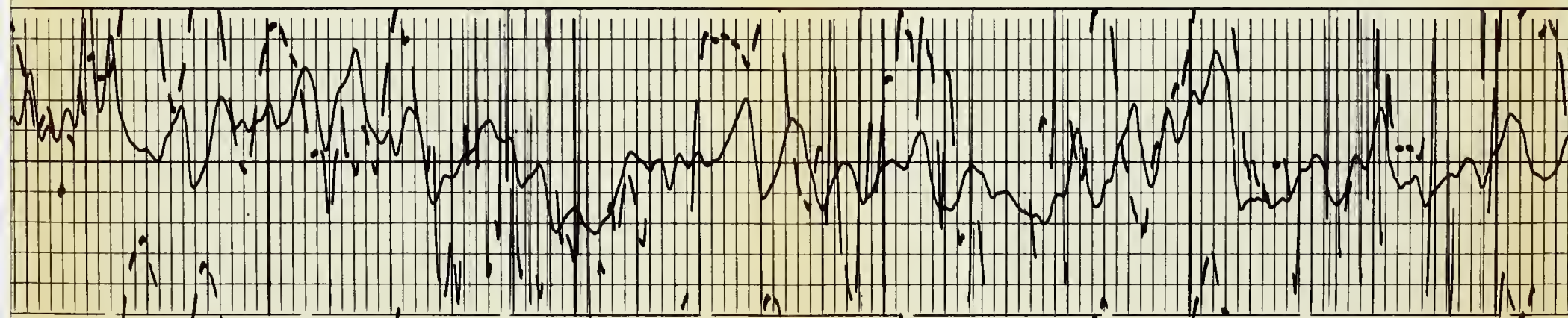




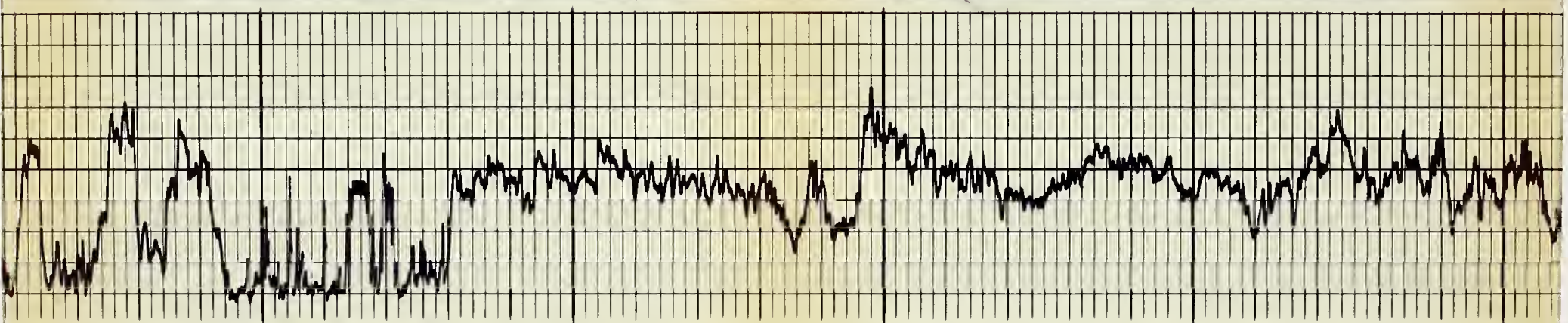
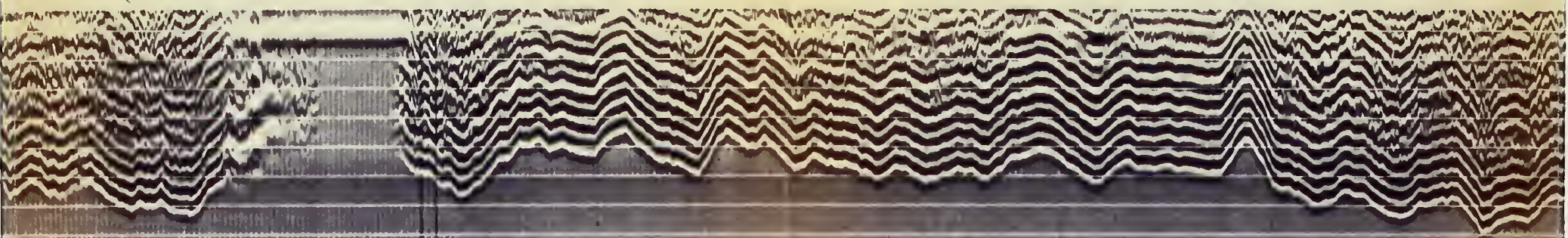


1500

1600



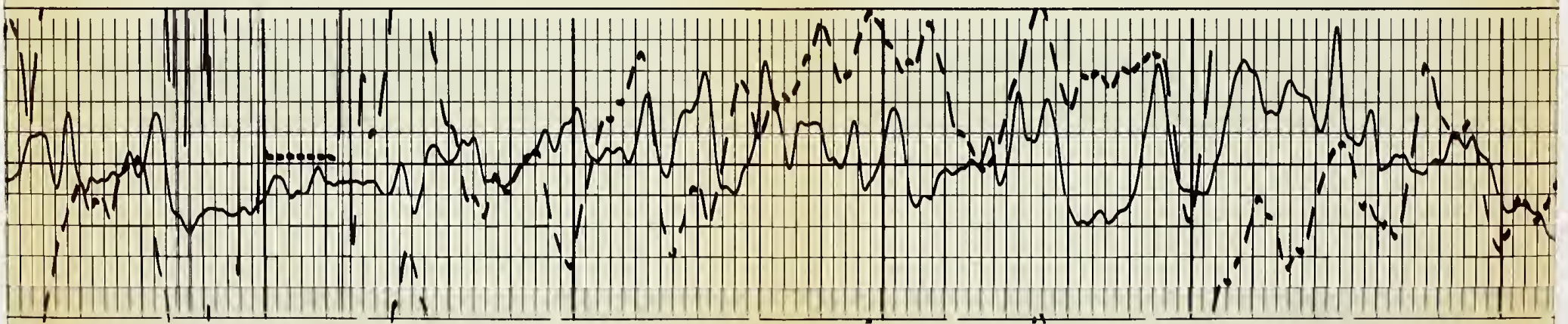




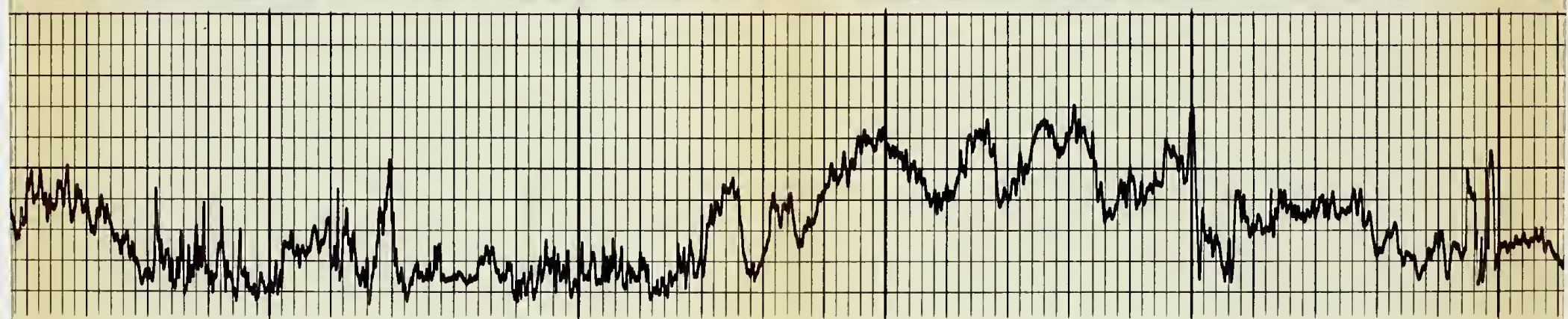
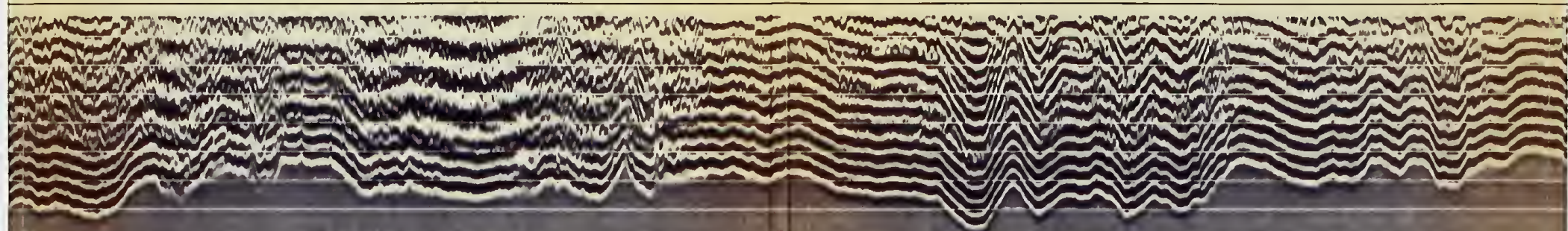
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1800

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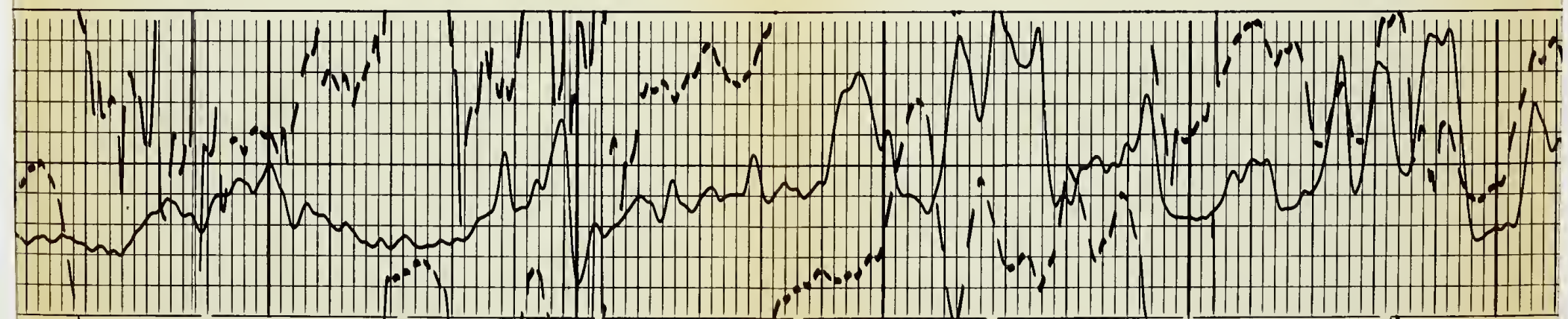




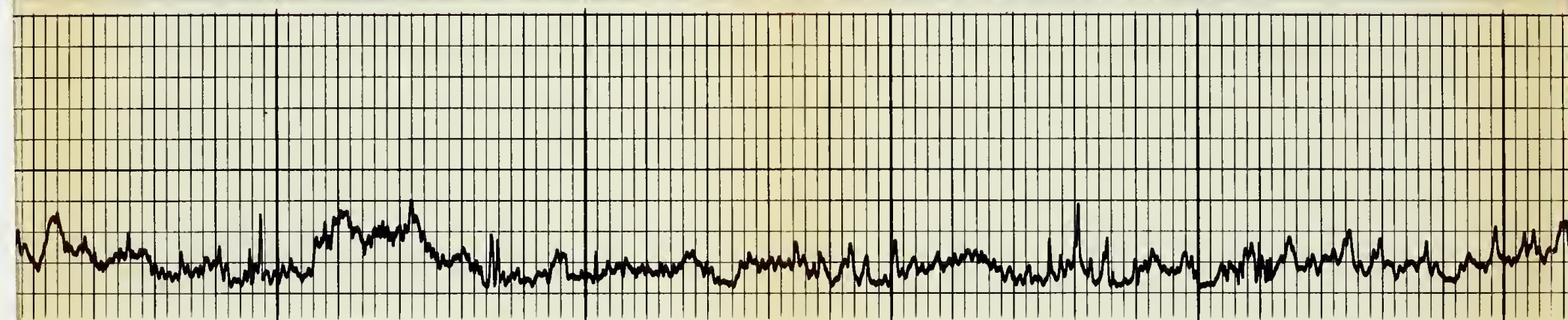
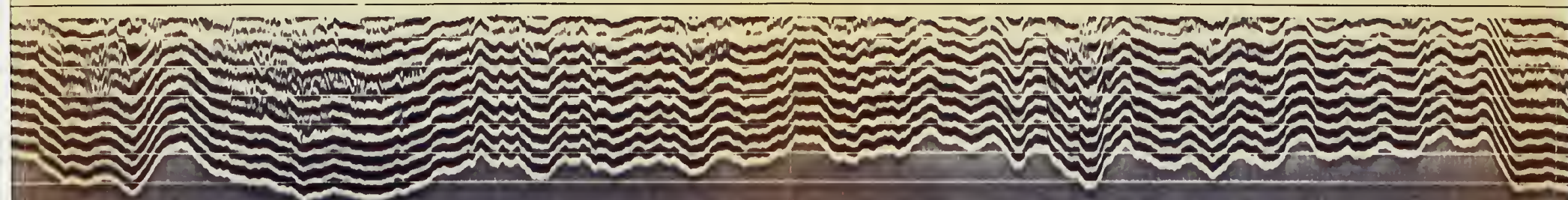


2000

2100



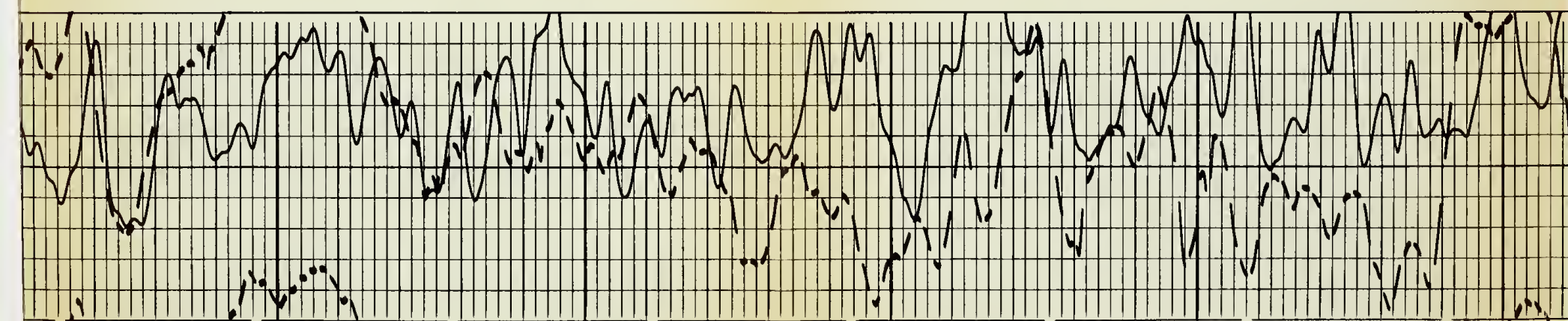




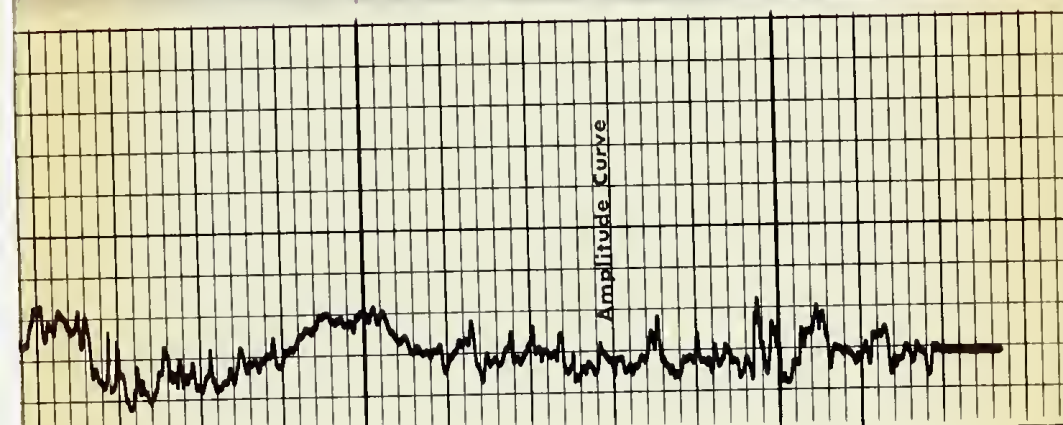
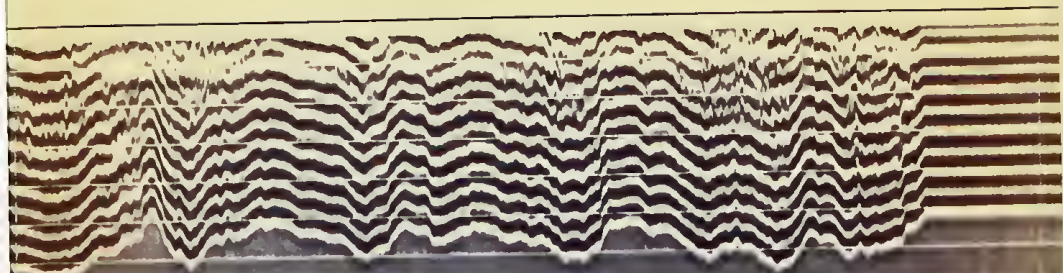
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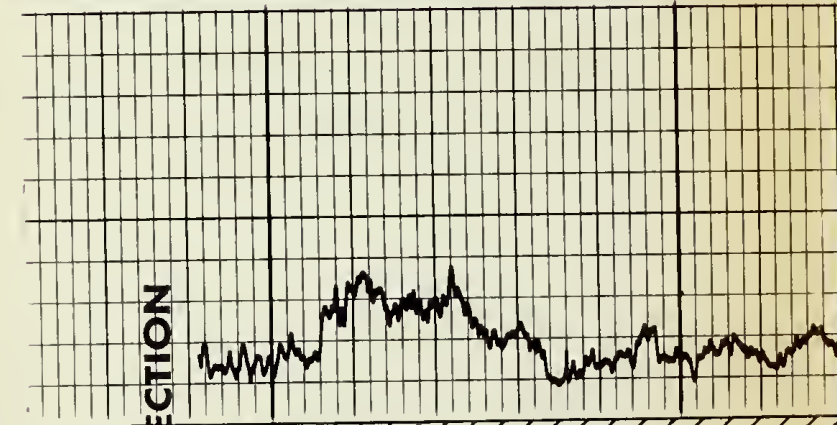
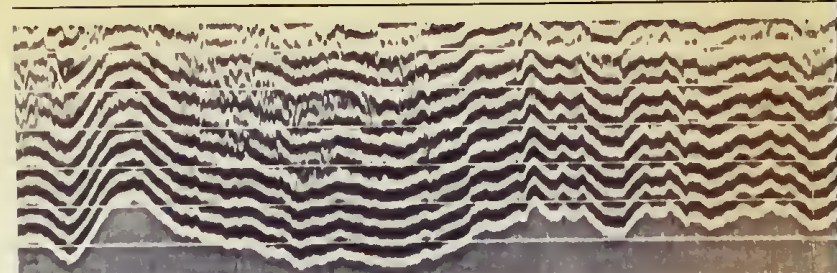
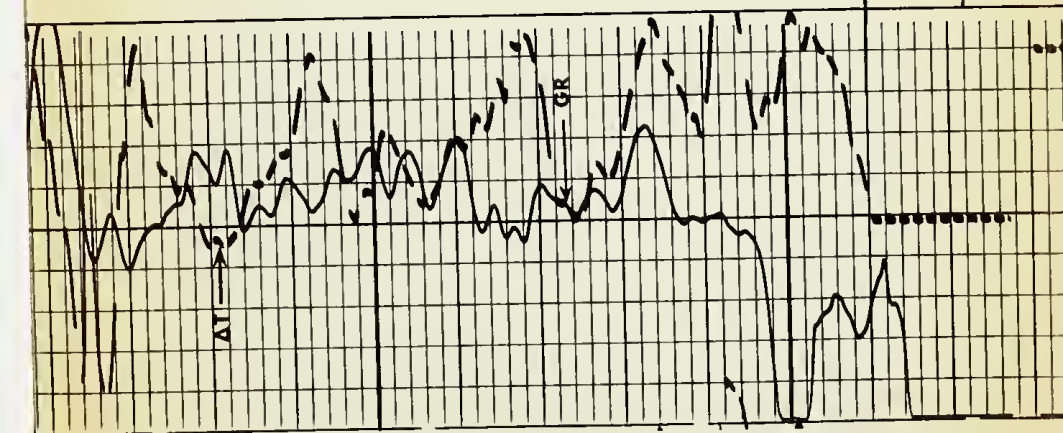
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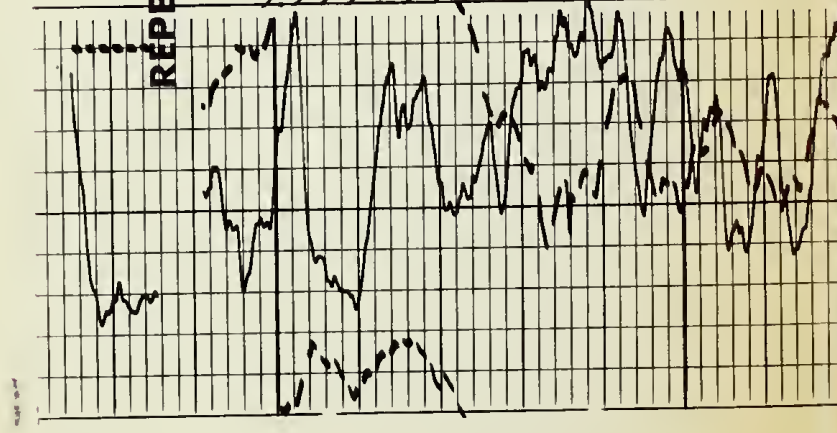


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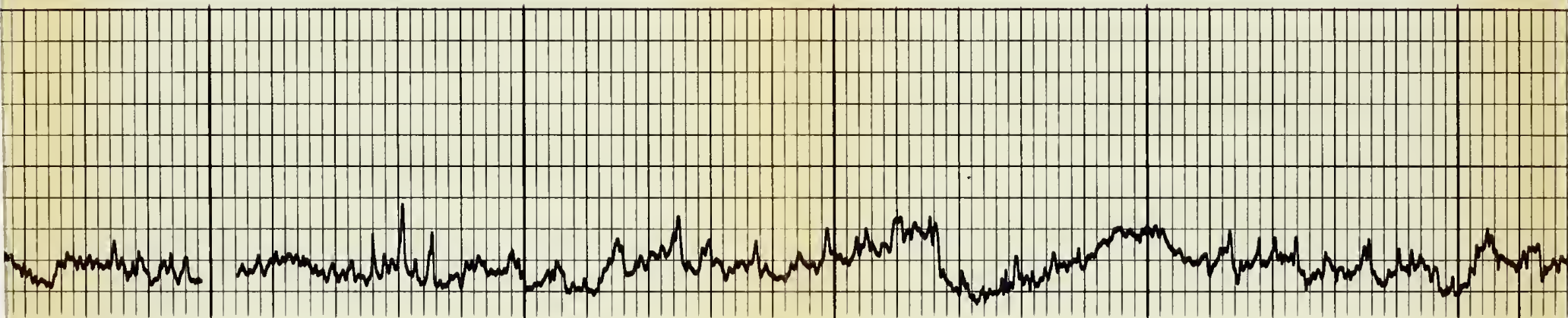
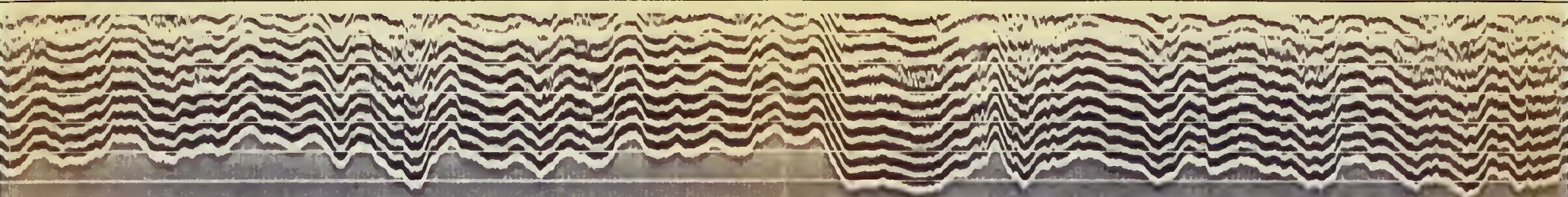


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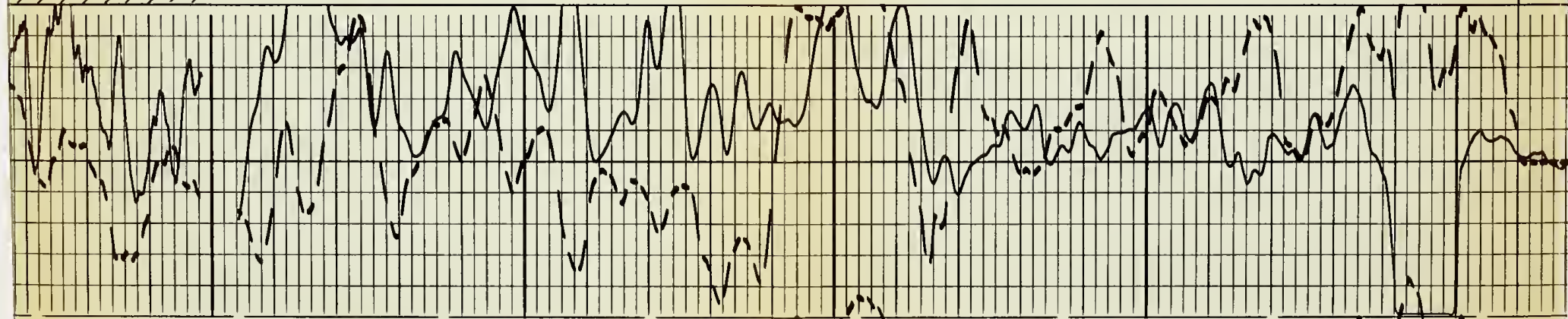
MEMORIZER OUT — CUR







CURVES INVALID 2300 2400 2500





<b>SINGLE RECEIVER AT</b> microseconds	<b>AMPLITUDE</b> MILLIVOLTS	<b>VARIABLE DENSITY</b> MICROSECONDS
600-----400 800-----600	0202001200	
<b>GAMMA RAY</b> API UNITS		
0150300		

**CALIBRATION RECORD**

<b>CALIBRATION AFTER SURVEY</b>		
3		
2		
1		
<b>CALIBRATION BEFORE SURVEY</b>		
3		
2		
1		

**BOREHOLE COMPENSATED SONIC CALIBRATION CODING**

- 1. MECHANICAL ZERO
- 2. 40 μ SEC/FT
- 3. 60 μ SEC/FT
- 4. 80 μ SEC/FT
- 5. 100 μ SEC/FT
- 6. 140 μ SEC/FT

**GAMMA RAY CALIBRATION CODING**

- 1. MECHANICAL ZERO
- 2. ELECTRICAL ZERO
- 3. RECORDER SENSITIVITY
- 4. MEMORIZER ADJUSTMENT
- 5. BACKGROUND
- 6. CALIBRATION

**CALIBRATION RECORD**

COMPANY	ATLANTIC RICHEFIELD COMPANY	SCHL.	FR 251C
WELL	SORGHUM GULCH NO. 1	SCHL.	TD 2522
FIELD	SORGHUM GULCH	DRLR	TD 2525
COUNTY	RIO BLANCO	Elev:	KB 6436.5
			DF 6435.5
			GL 6428

COREHOLE SG-1

THIS ENVELOPE CONTAINS THE FOLLOWING  
GEOPHYSICAL LOGS:

1. Schlumberger Formation Density
2. Schlumberger Temperature
3. Schlumberger Dual Laterolog

II B-2206



# Schlumberger

## DUAL LATEROLOG

COUNTY <u>RIO BLANCO</u> FIELD or <u>LOCATION SORGHUM GULCH</u> WELL <u>SORGHUM GULCH #1</u> COMPANY <u>ATLANTIC RICHFIELD</u>	COMPANY <u>ATLANTIC RICHFIELD COMPANY</u>  WELL <u>SORGHUM GULCH #1</u> FIELD <u>SORGHUM GULCH</u> COUNTY <u>RIO BLANCO</u> STATE <u>COLORADO</u> 						
LOCATION: API Serial No. <u>1946' FEL &amp; 1314 FSL</u> Sec. <u>2</u> Twp. <u>3S</u> Rge. <u>97W</u>		Other Services: BHC-GR GR-AMP-VDL FDC-GR					
Permanent Datum: <u>GL</u> , Elev. <u>6428</u> Log Measured From <u>GL</u> Ft. Above Perm. Datum Drilling Measured From <u>GL</u>		Elev.: K.B. <u>6436.5</u> D.F. <u>6435.5</u> G.L. <u>6428</u>					
Date	<u>12-7-74</u>						
Run No.	<u>ONE</u>						
Depth—Driller	<u>2525</u>						
Depth—Logger	<u>2520</u>						
Btm. Log Interval	<u>2508</u>						
Top Log Interval	<u>154</u>						
Casing—Driller	<u>8 5/8 @ 156</u>	<u>(a)</u>	<u>(a)</u>	<u>(a)</u>			
Casing—Logger	<u>154</u>						
Bit Size	<u>6-3/4</u>						
Type Fluid in Hole	<u>WATER</u>						
Dens.	Visc.	<u>80</u>	<u>-</u>				
pH	Fluid Loss	<u>NA</u>	<u>ml</u>	<u>ml</u>	<u>ml</u>	<u>ml</u>	<u>ml</u>
Source of Sample		<u>MUDPIT</u>					
R <sub>m</sub>	(a) Meos. Temp.	<u>3.7 @ 64 °F</u>	<u>(a)</u>	<u>°F</u>	<u>(a)</u>	<u>°F</u>	<u>(a)</u>
R <sub>mf</sub>	(a) Meos. Temp.	<u>- @ °F</u>	<u>(a)</u>	<u>°F</u>	<u>(a)</u>	<u>°F</u>	<u>(a)</u>
R <sub>mc</sub>	(a) Meos. Temp.	<u>- @ °F</u>	<u>(a)</u>	<u>°F</u>	<u>(a)</u>	<u>°F</u>	<u>(a)</u>
Source: R <sub>mf</sub> R <sub>mc</sub>		<u>CLEAR WATER</u>					
R <sub>m</sub>	(a) BHT	<u>2.2 @ 119 °F</u>	<u>(a)</u>	<u>°F</u>	<u>(a)</u>	<u>°F</u>	<u>(a)</u>
Time Since Circ.		<u>28 HOURS</u>					
Max. Rec. Temp.		<u>119</u>	<u>°F</u>	<u>°F</u>	<u>°F</u>	<u>°F</u>	<u>°F</u>
Equip. Location		<u>7683 VRNL</u>					
Recorded By		<u>YATCHAK/ETTER</u>					
Witnessed By		<u>BURNS</u>					

FOLO HERE

[illegible]

# CALIBRATION DATA

CALIBRATION: BACKGND. SOURCE GALV. INCR. SENS. TAP SENS. TAP TIME  
CPS. DIVISION (FOR CAL) (RECORD) CONST.

GAMMA RAY:

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to Clause 7 of our General Terms and Conditions as set out in our current Price Schedule.

## SPONTANEOUS-POTENTIAL

MILLIVOLTS

— 20 MV +

## DEPTHS

## RESISTIVITY

OHMS. M<sup>2</sup> M

## DEEP LATEROLOG

0.2 1.0 10 100 1000 2000

## SHALLOW LATEROLOG

0.2 1.0 10 100 1000 2000

Casing

0200

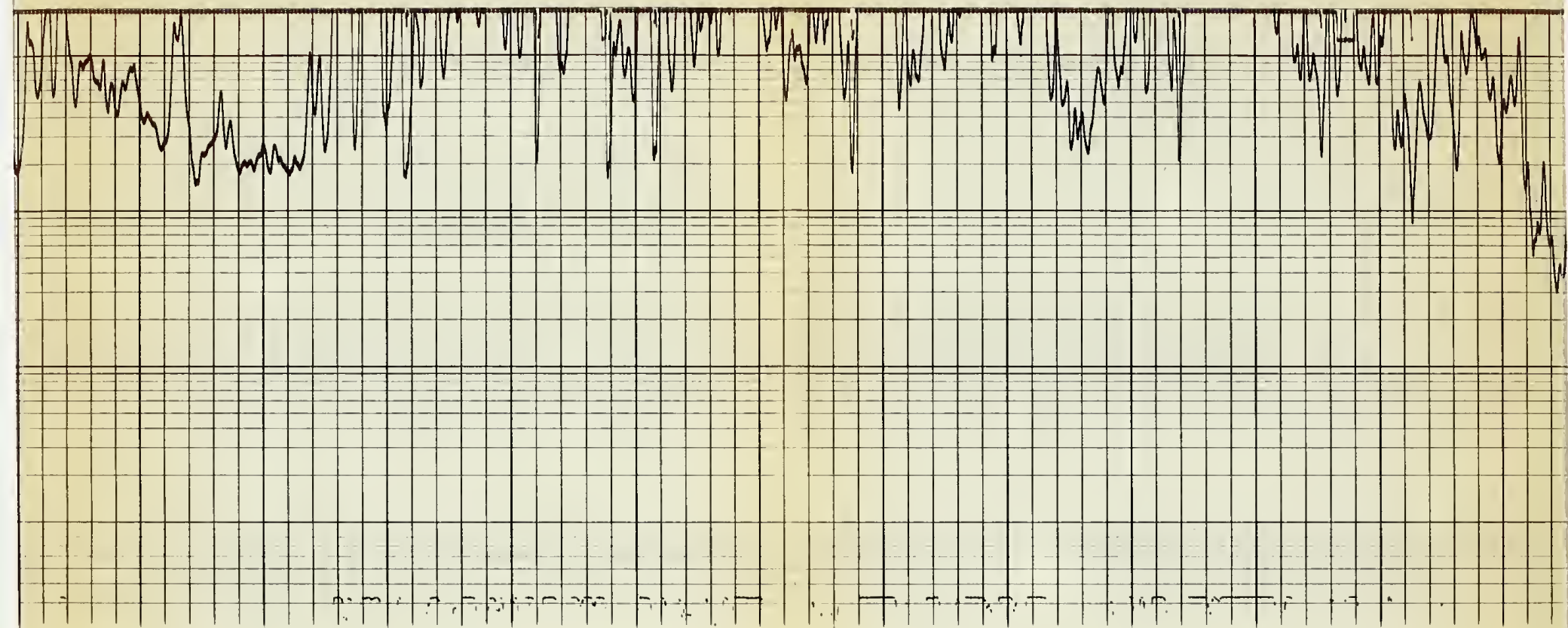
0300

0400

0500

11 D





0600

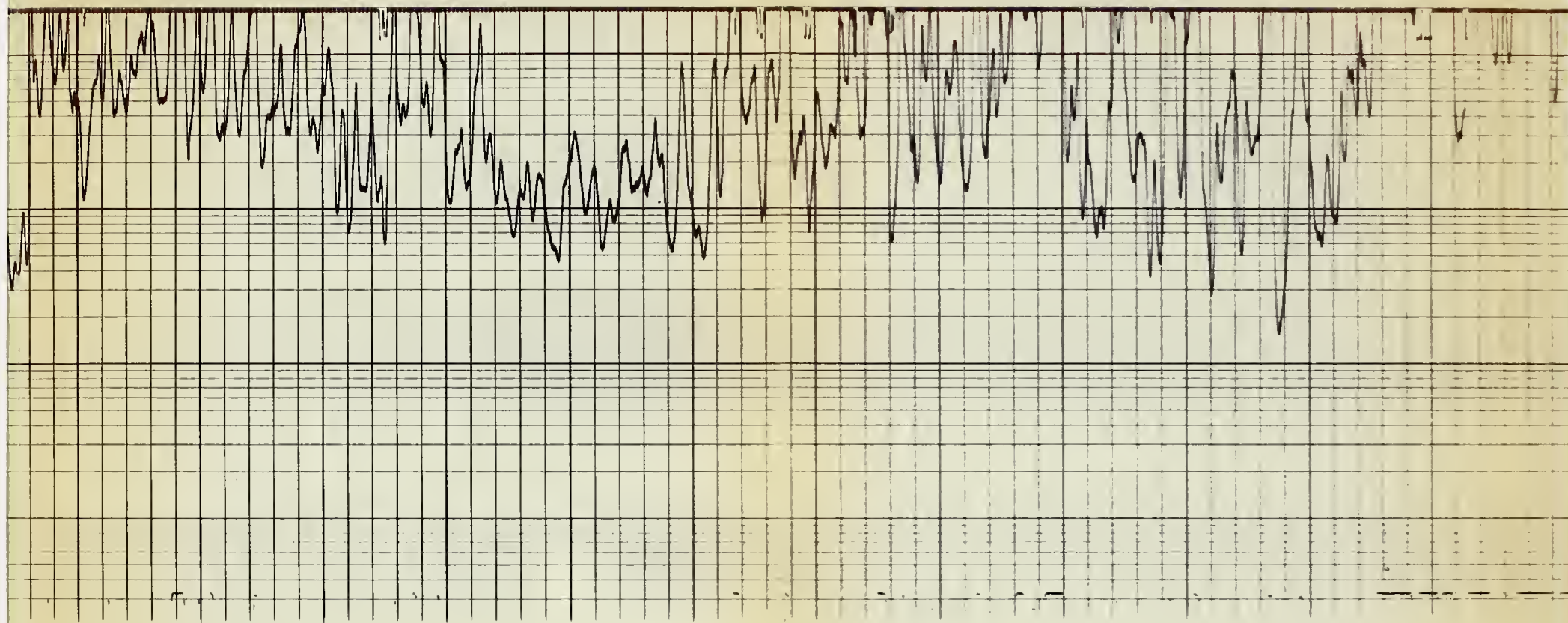
0700

0800

0900

1000

1100



1200

1300

1400

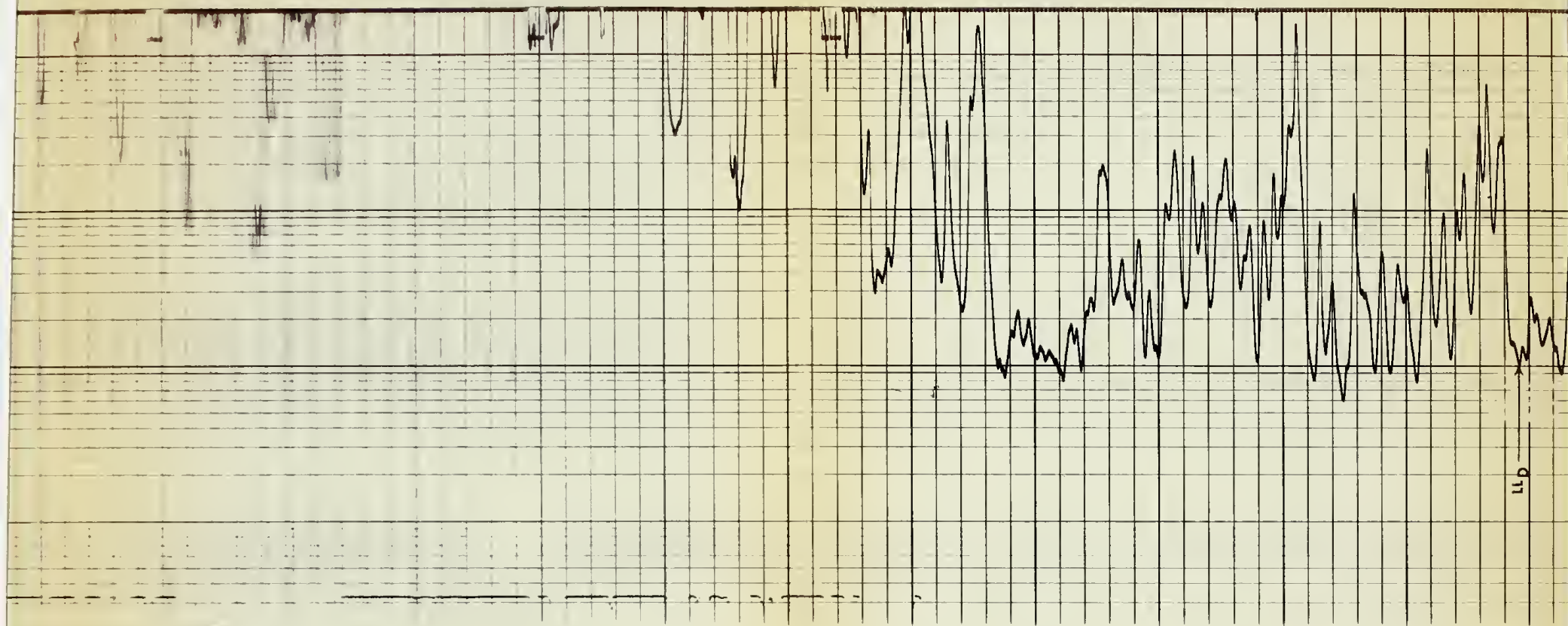
1500

1600

1700

800





800

2000

2100

2200

2300

2400

u p

2500

SPONTANEOUS-POTENTIAL  
MILLIVOLTS

DEPTHS

RESISTIVITY  
OHMS. M<sup>2</sup>/M

DEEP LATEROLOG

SHALLOW LATEROLOG

20  
MV  
+  
-

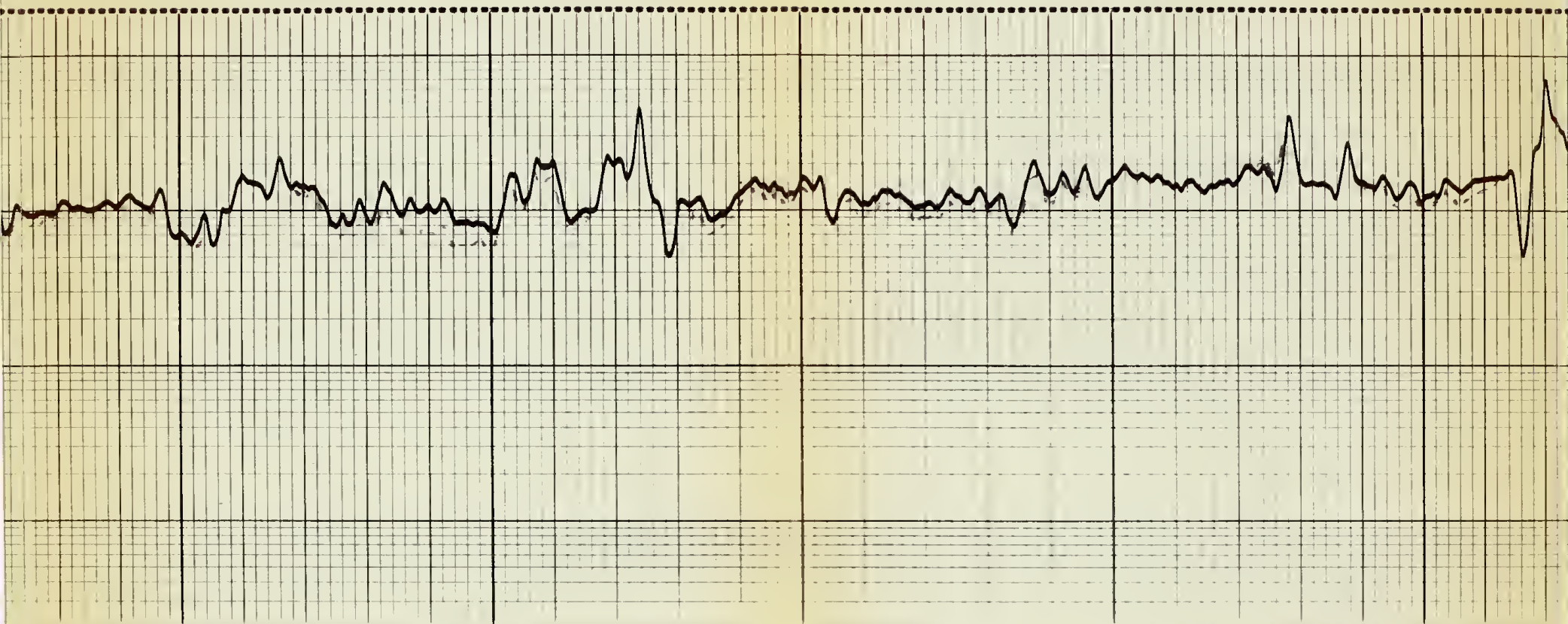
Casing

SP

LLD

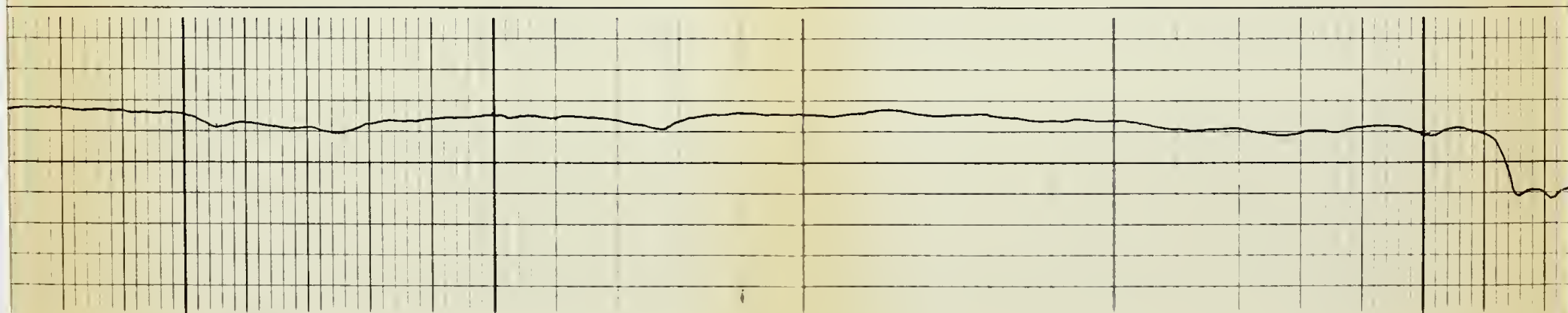
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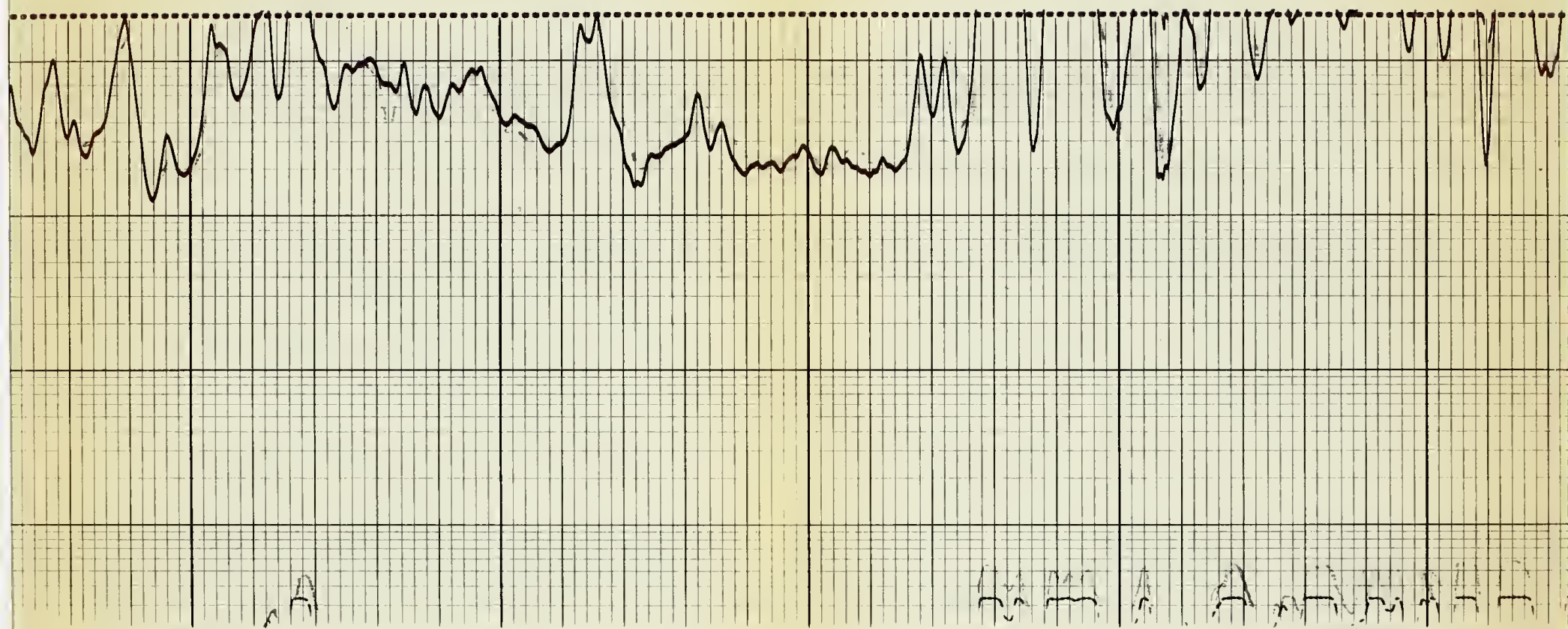




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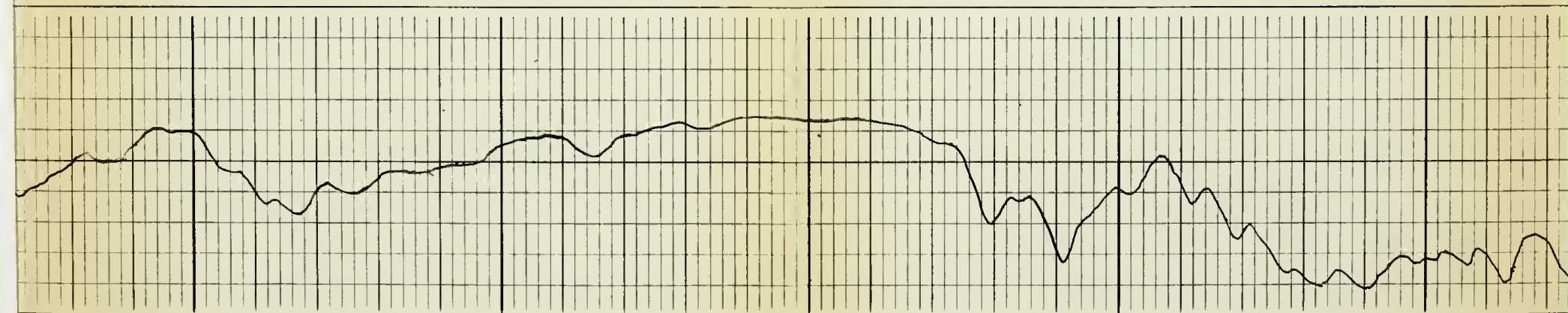
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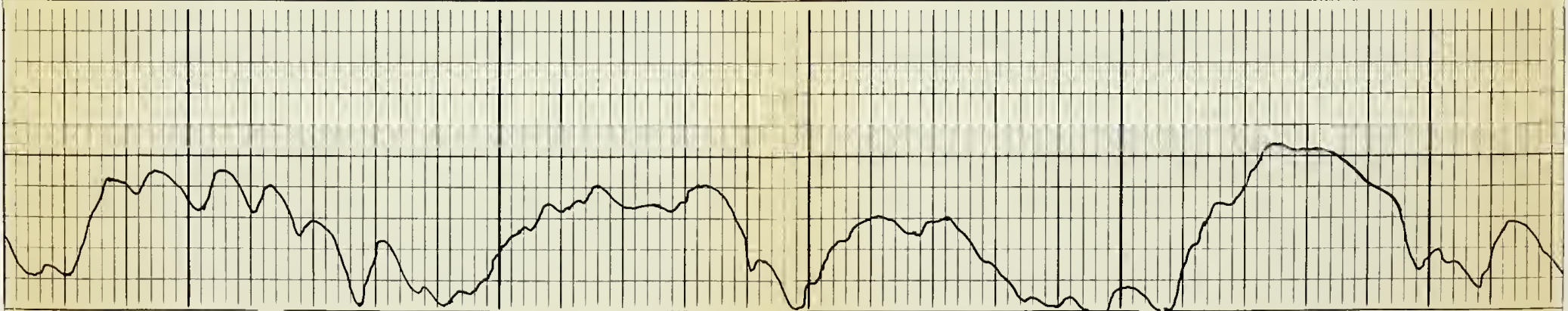
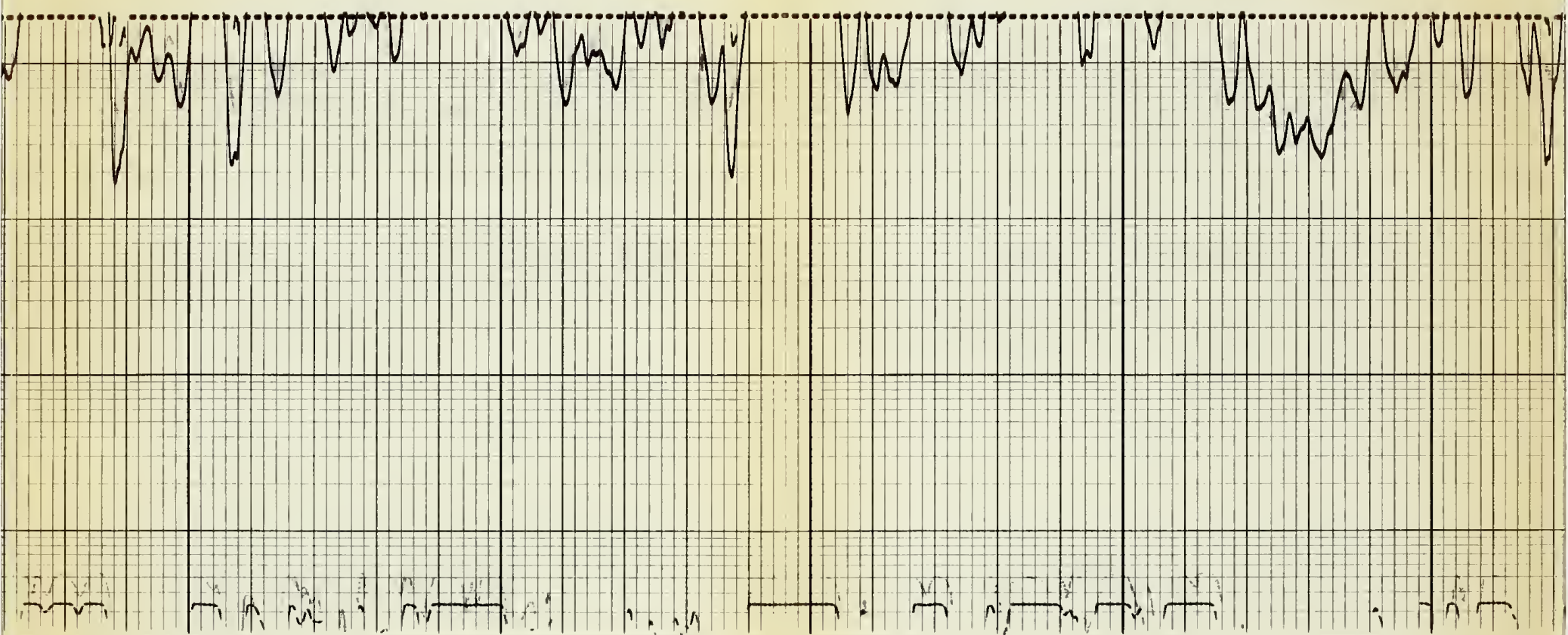


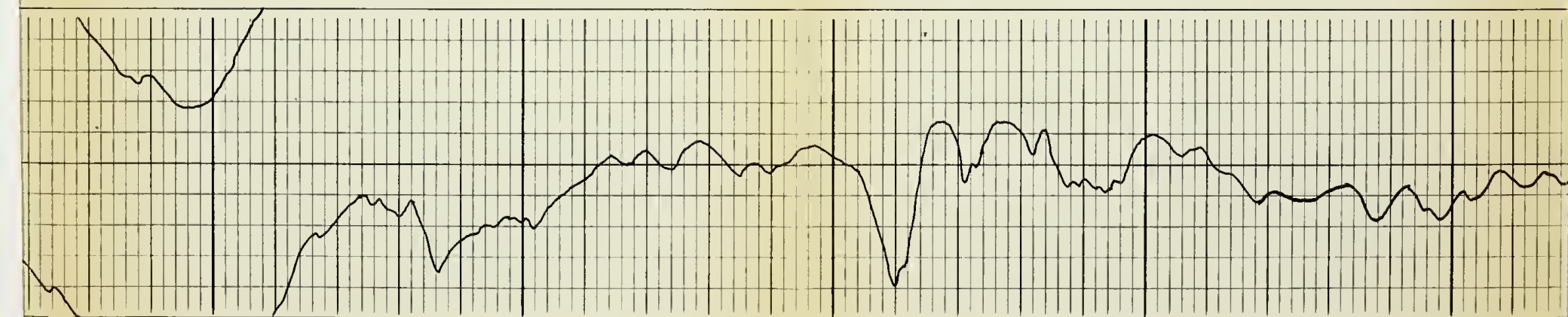
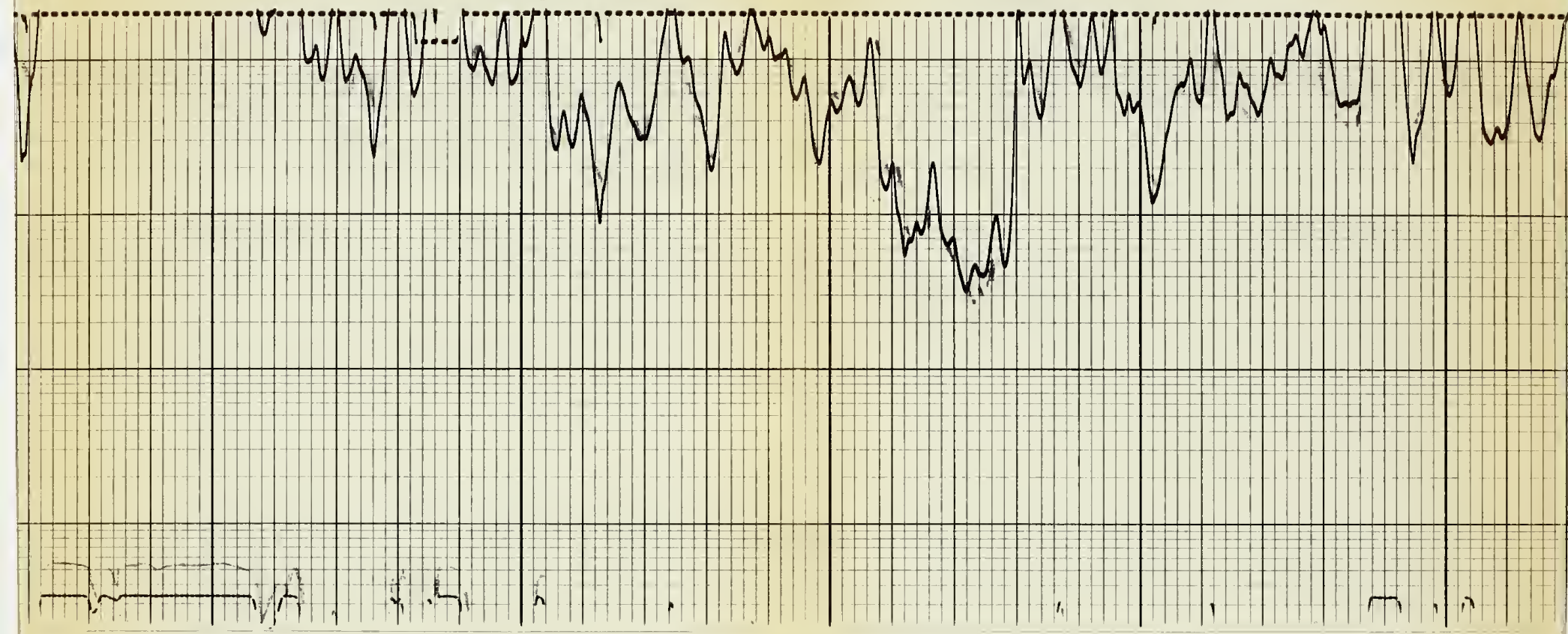
c 000

c 000









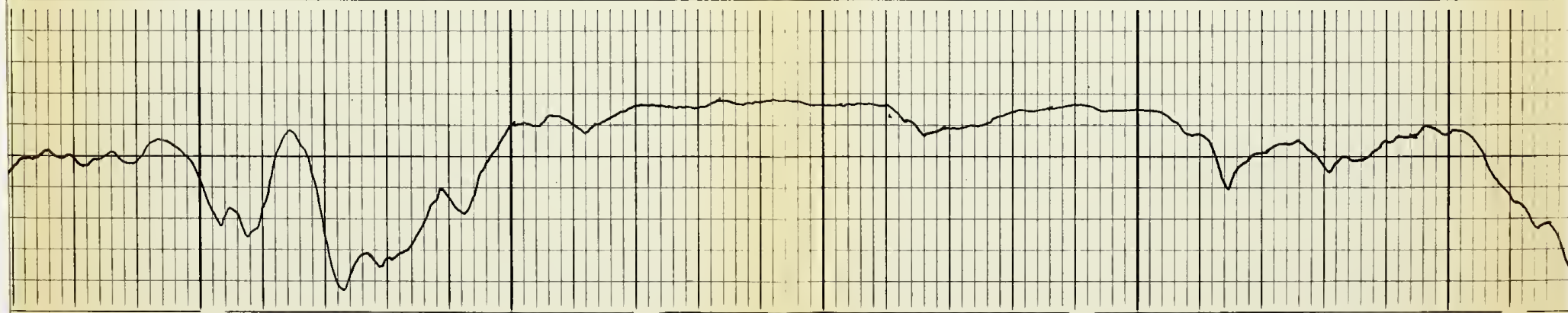


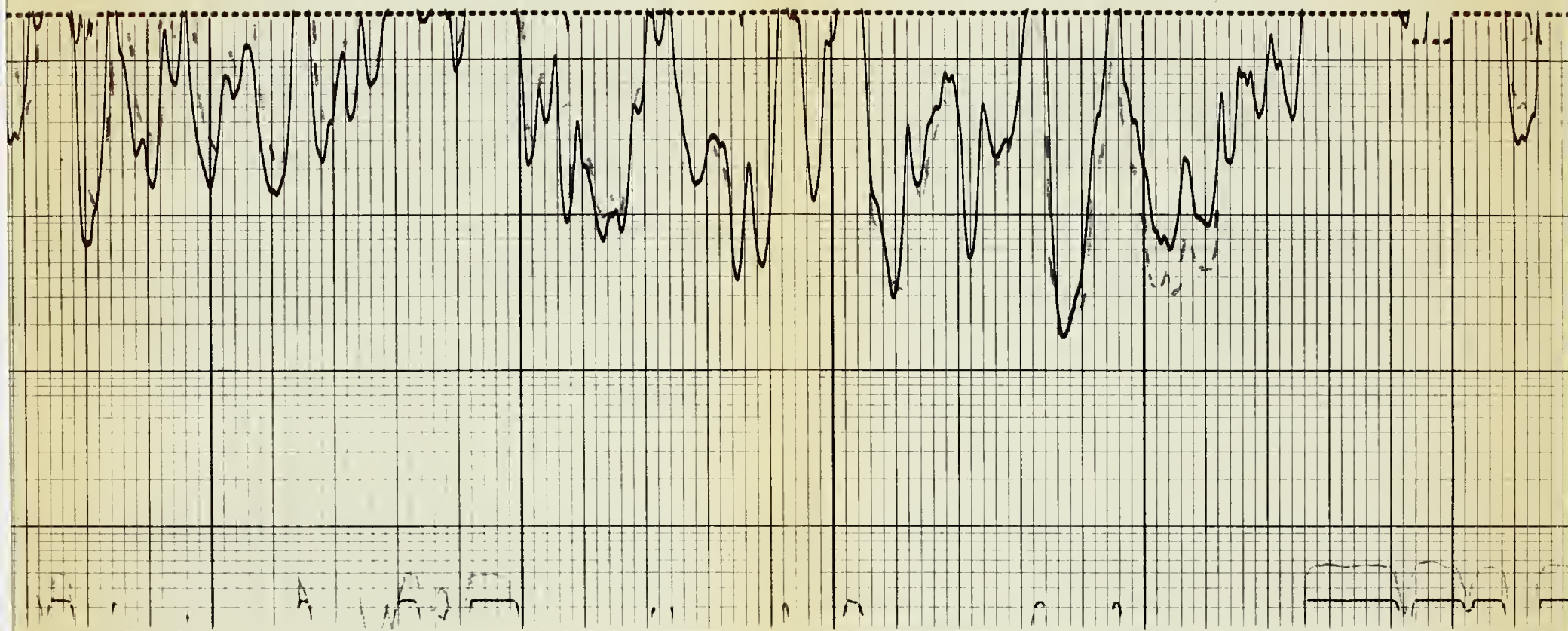


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400

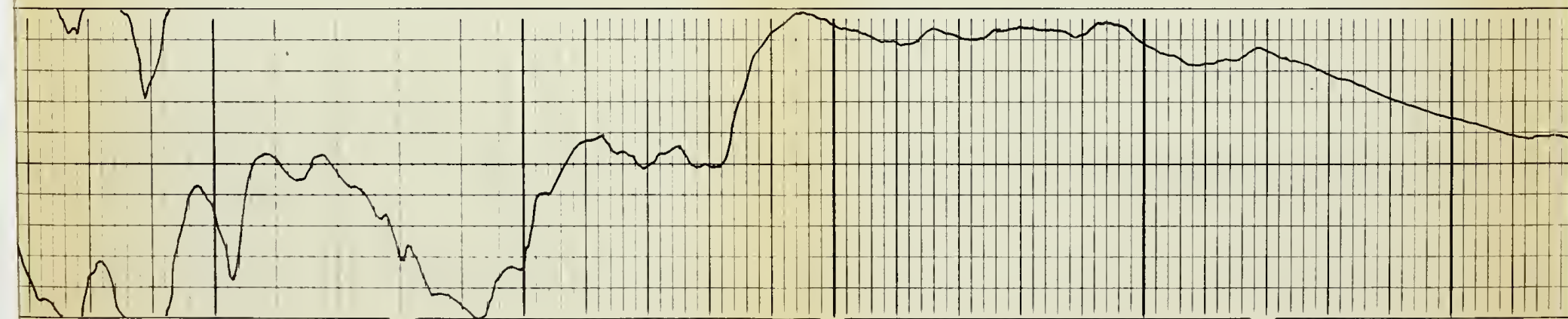
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1600

700



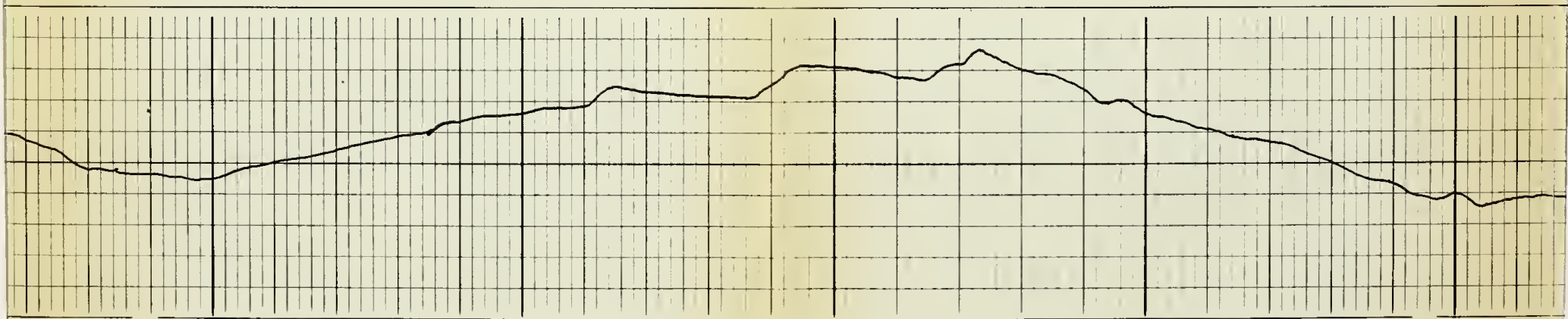


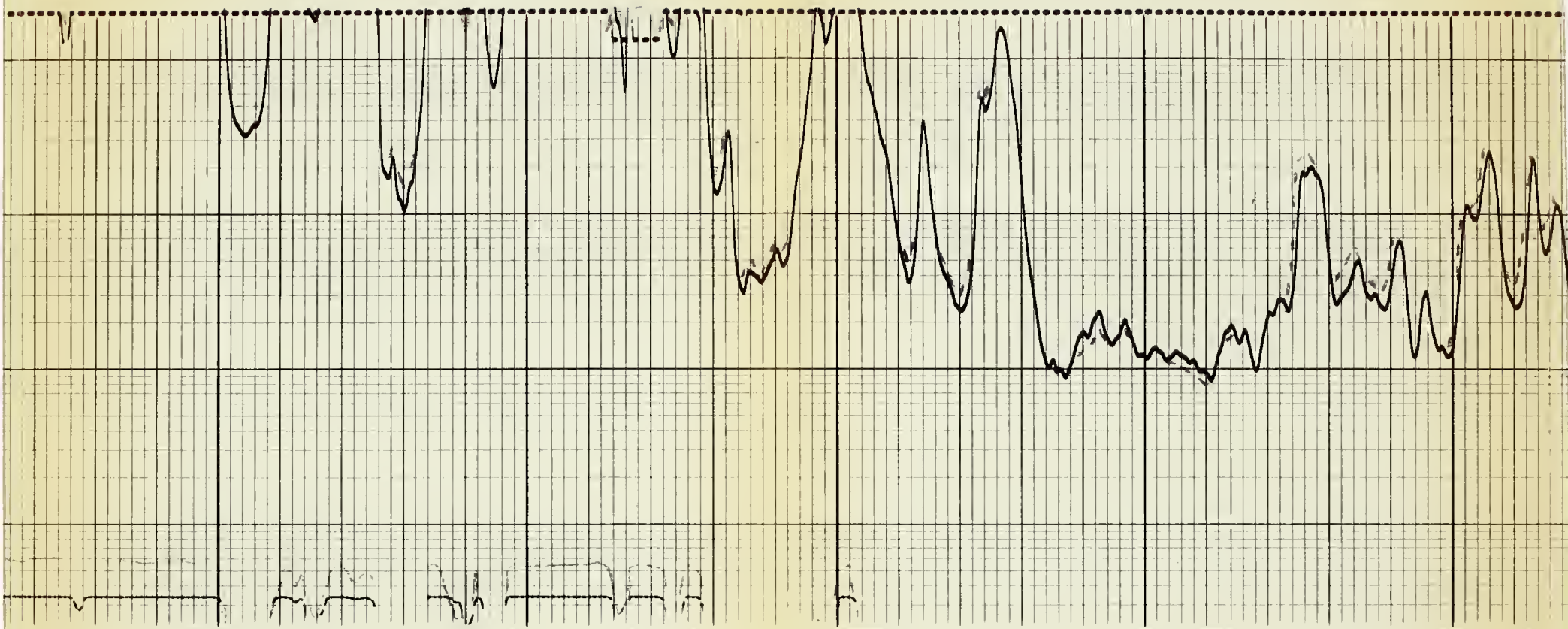


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900

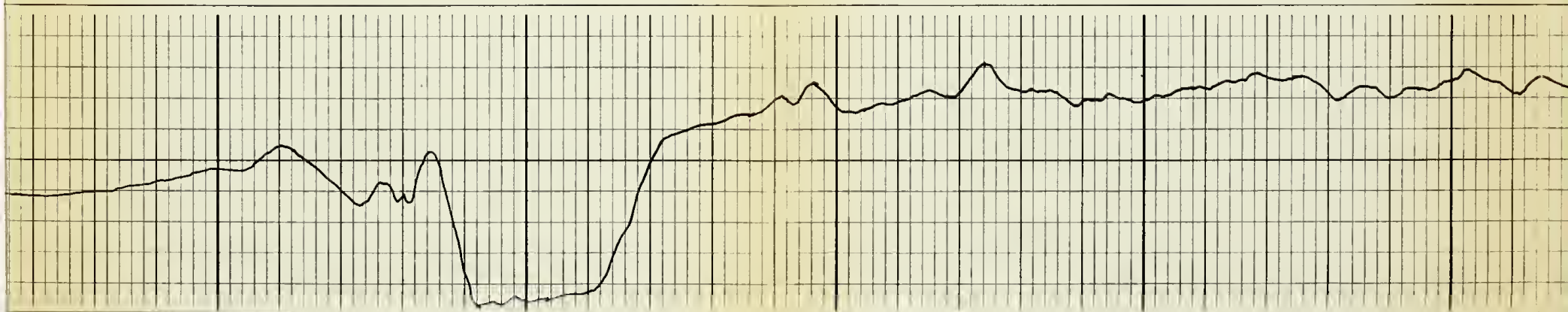
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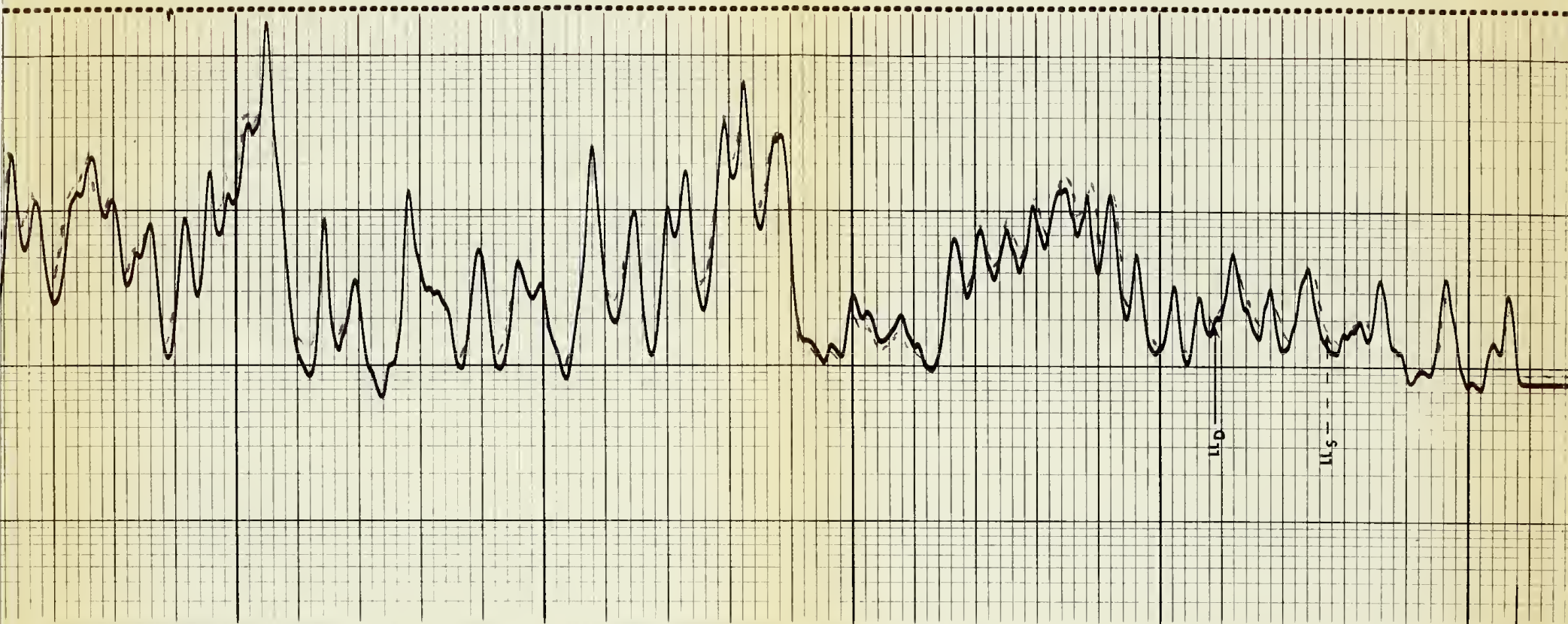


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2200



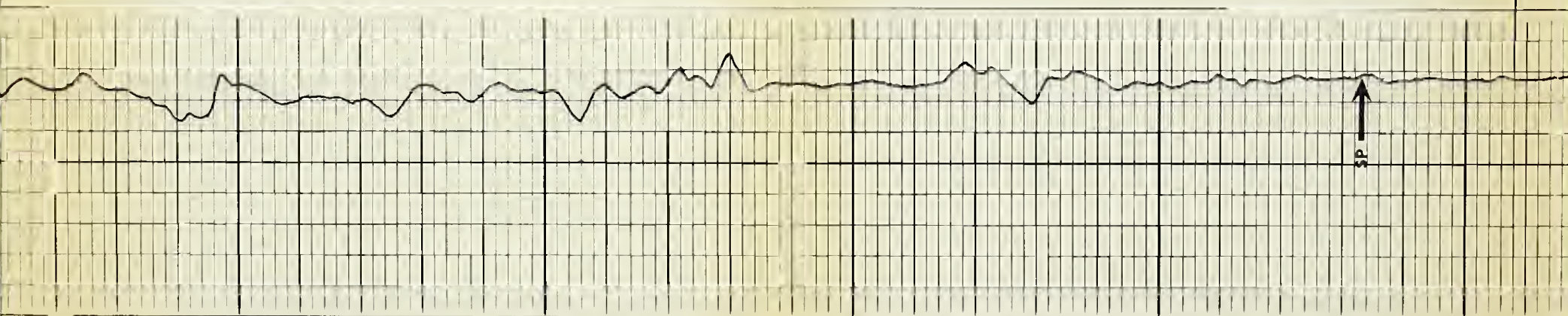




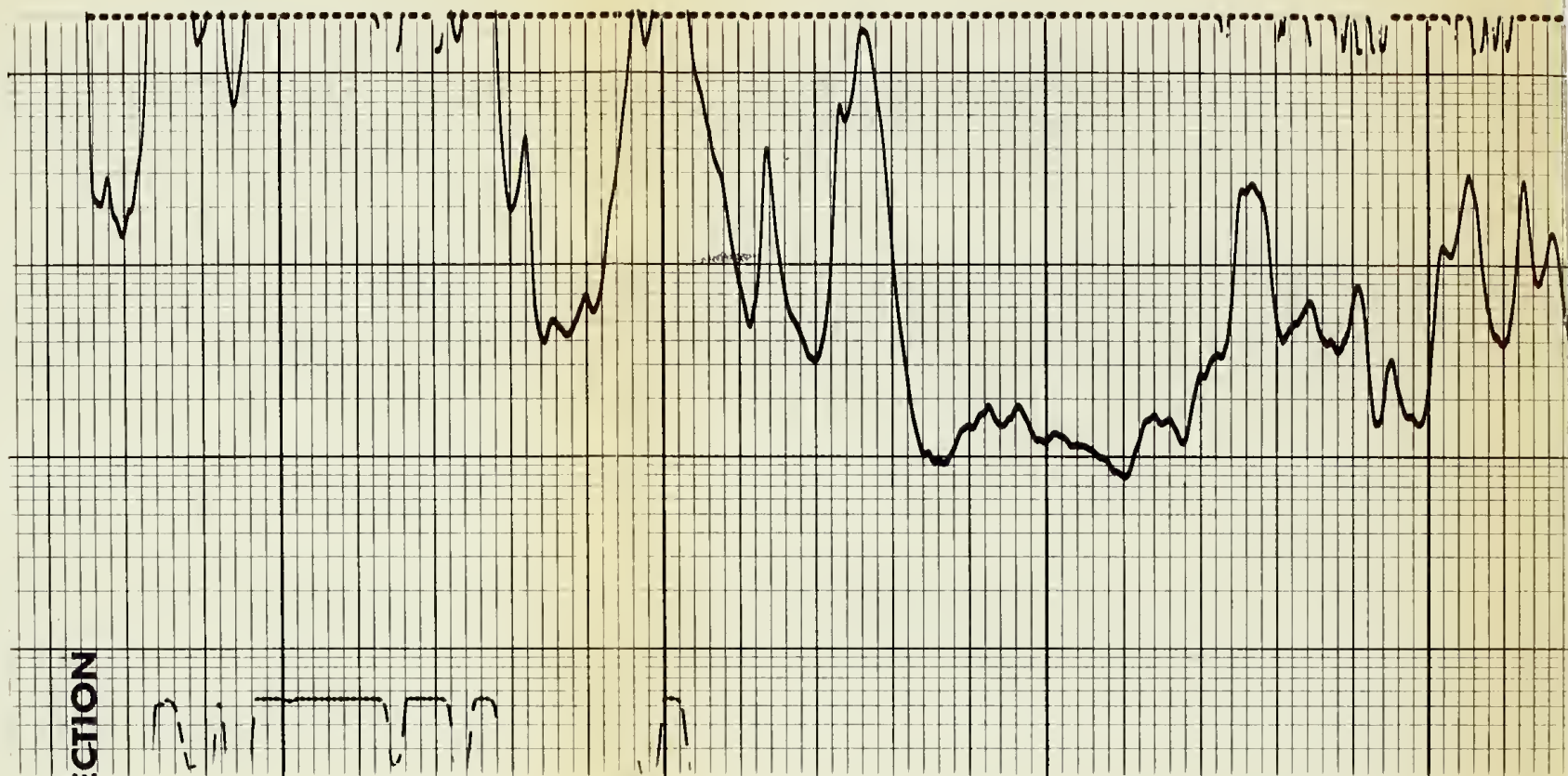
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2400

250



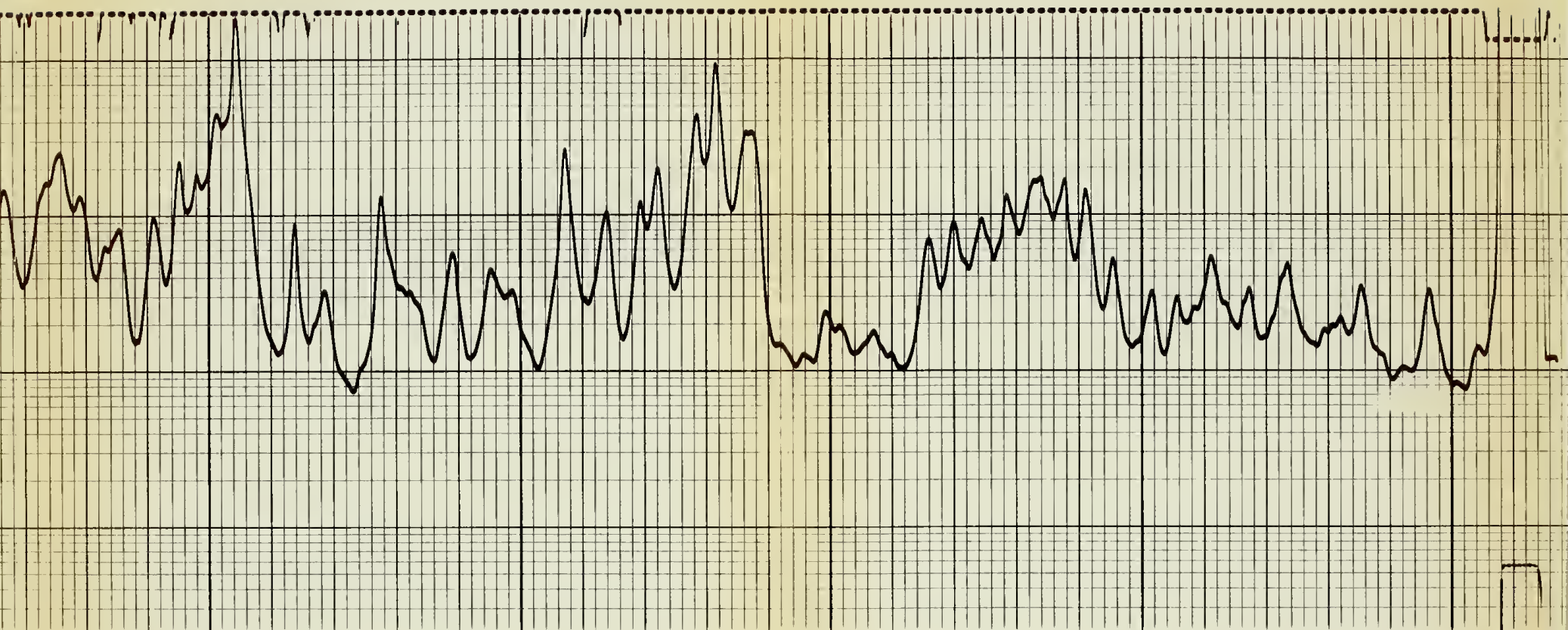
SP



2100

2200

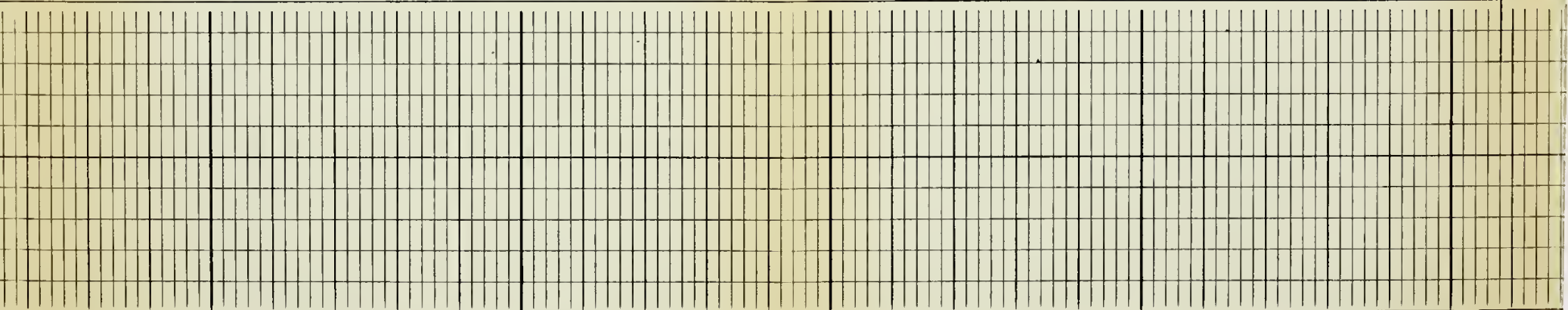




2300

24CC

250C



—  $\frac{20}{\text{MV}}$  +

SPONTANEOUS-POTENTIAL  
MILLIVOLTS

DEPTHS

RESISTIVITY  
OHMS. M<sup>2</sup> M

SHALLOW LATEROLOG

DEEP LATEROLOG

COMPANY ATLANTIC RICHFIELD COMPANY

WELL SORGHUM GULCH #1

FIELD SORGHUM GULCH

COUNTY RIO BLANCO

STATE COLORADO

SCHL. FR 2508

SCHL. TD 2520

DRLR TD 2525

Elev:

KB 64365

DF 64355

GL 6428

CALIBRATION RECORD

CALIBRATION BEFORE SURVEY

5

4

3

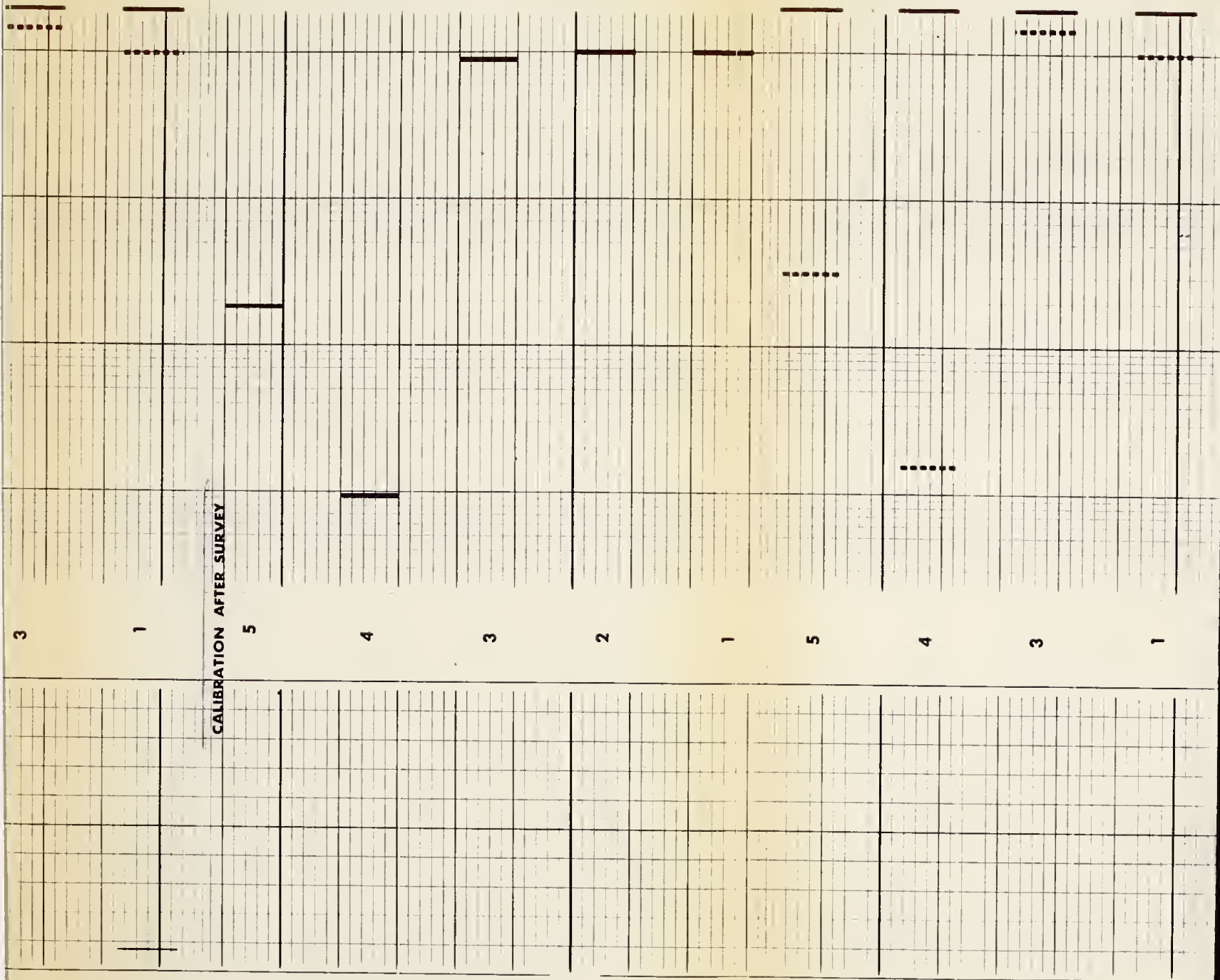
2

1

5

4





SIMULTANEOUS DUAL LATEROLOG CALIBRATION CODING

1. MECHANICAL ZERO
2. RECORD SET (SP CALIBRATE)
3. TEST - 1 (1 ohm-m)
4. TEST - 2 (1000 ohm-m)
5. TOOL CAL (31.6 ohm-m)

GAMMA RAY CALIBRATION CODING

1. MECHANICAL ZERO
2. TEST - 1 - ELECTRICAL ZERO
3. TOOL CAL - BACKGROUND
4. TOOL CAL- TEST JIG ON
5. CAL CHECK f = \_\_\_\_\_

SEQUENTIAL DUAL LATEROLOG CALIBRATION CODING

1. MECHANICAL ZERO
2. CABLE BALANCE ADJUST - Ild ONLY
3. FUNCTION FORMER 1000 ohm-m
4. FUNCTION FORMER 1 ohm-m
5. MEMORIZER ADJUST - Ild ONLY (DOES NOT APPLY IF GR IS NOT RUN)
6. CALIBRATE Ild - 17 ohm-m  
Ild - 29 ohm-m

**CALIBRATION RECORD**

COMPANY	ATLANTIC RICHFIELD COMPANY	FR 2508
WELL	SORGHUM GULCH #1	TD 2520
FIELD	SORGHUM GULCH	TD 2525
COUNTY	RIO BLANCO	STATE COLORADO
		KB 64365
		DF 64355
		GL 6428

# COMPENSATED FORMATION DENSITY LOG

Gamma-Gamma

COUNTY	RIO BLANCO
FIELD or LOCATION	SORGHUM GULCH
WELL	SORGHUM GULCH #1
COMPANY	ATLANTIC RICHFIELD

COMPANY ALTANTIC RICHFIELD COMPANY

WELL \_\_\_\_\_ SORGHUM GULCH #1

FIELD \_\_\_\_\_ SORGHUM GULCH \_\_\_\_\_

COUNTY RIO BLANCO STATE COLORADO

Locotion:	API Seriol No.
-----------	----------------

1946' FEL & 1314' FSL

Sec. 2 Twp. 3S Rge. 97W

Other Services:

BHC-GR  
GR-AMP-VDL  
LL-7

Permanent Datum: GL ; Elev.: 6428  
Log Measured From GL , 0 Ft. Above Perm. Datum  
Drilling Measured From GL

Elev.: K.B. 6436.5  
D.F. 6435.5  
G.L. 6428

The well name, location and borehole reference data were furnished by the customer.

FOLO HERE

## CHANGES IN MUD TYPE OR ADDITIONAL SAMPLES

[illegible]

## EQUIPMENT DATA

Run No.	Run No.	ONE
Panel No.	462	
Cort No.	165	
Skid No.	320	
Sonde No.	377	
Source	2933	
Colibrator	544	
GR Cort.	204	
TTR	-	
Mem Panel	166	

## BIT SIZE/CASING DATA

Bit	From	To	Csg. Size	Csg. Wt.	From	To
3						
3/4	154	2522	8 5/8	-	SURF	154

## SCALE CHANGES

[illegible]

### LOGGING DATA

[illegible]

## REMARKS

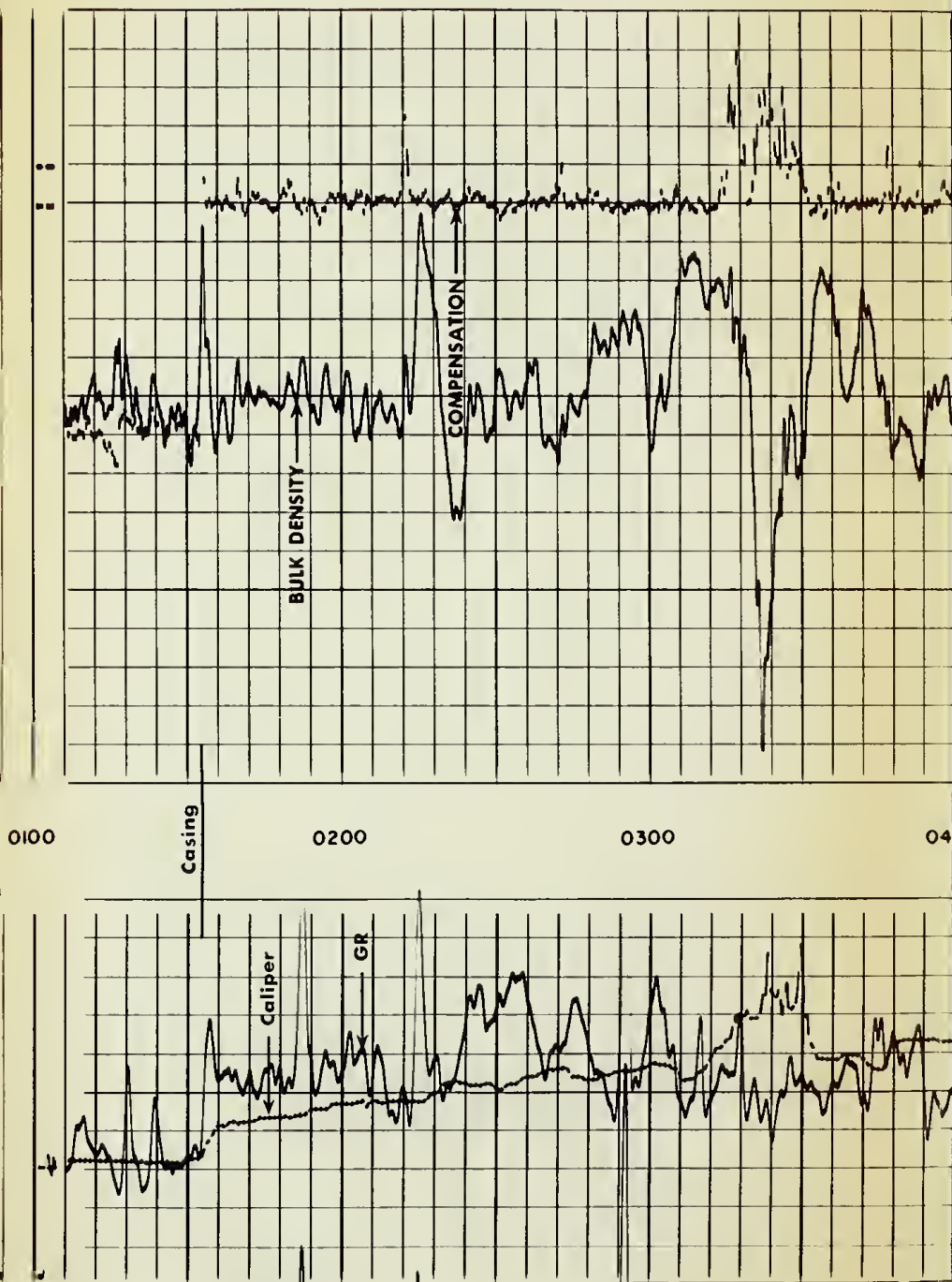
REMARKS  
Service Order No. - 6930

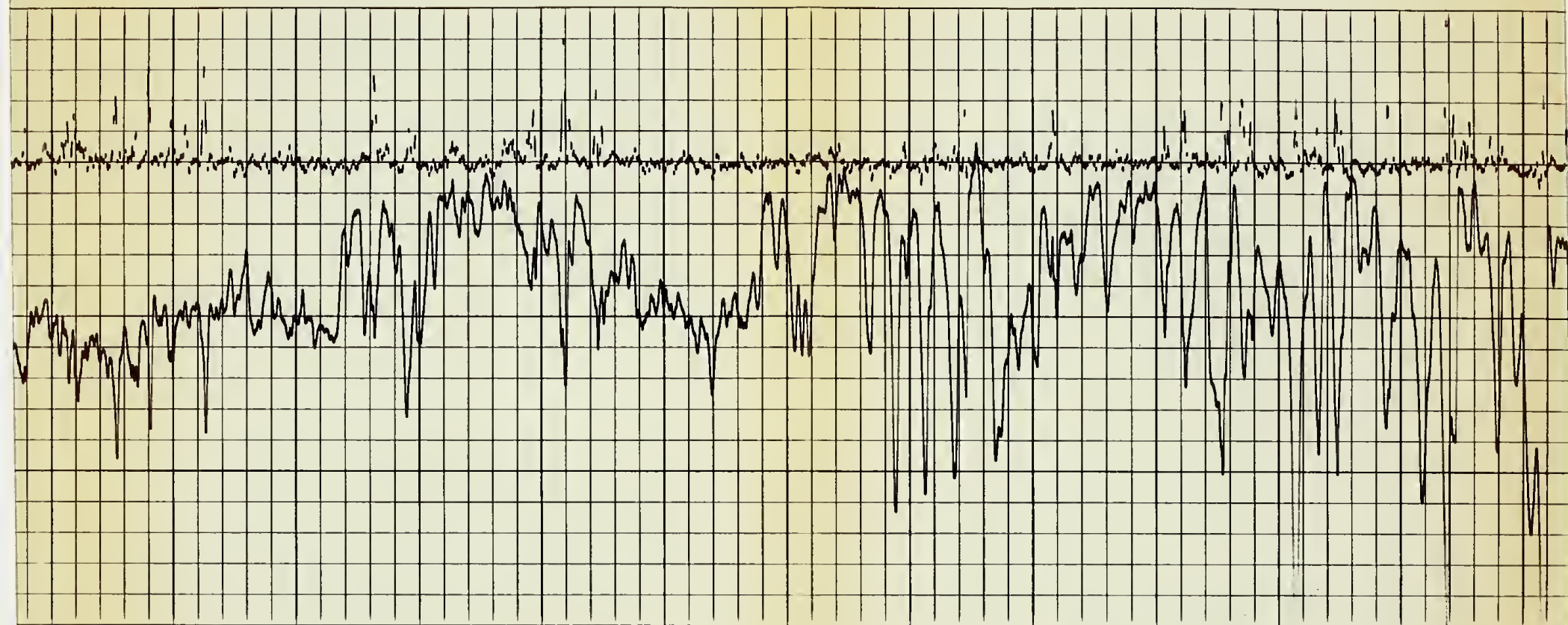


CALIBRATION DATA						
Run No.	Gamma Ray		FDC — Before Lag — ACPS		FDC — After Lag — ACPS	
	API Scale	Background CPS	Total CPS	P <sub>1</sub>	P <sub>2</sub>	P <sub>1</sub>
1	0-165	70	290	375	750	370
2						750
3						
4						

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to Clause 7 of our General Terms and Conditions as set out in our current Price Schedule.

<b>CALIPER</b> HOLE DIAM. IN INCHES	5    6    7    8    9    10    11    12    13    14    15	DEPTHS	CORRECTION GRAMS/CC.	-.25    0    .25
	<b>GAMMA RAY</b> API UNITS			<b>BULK DENSITY</b> GRAMS CC.
0	150			1.7    2.2    2.7
150	300			.7    1.2    1.7





0400

0500

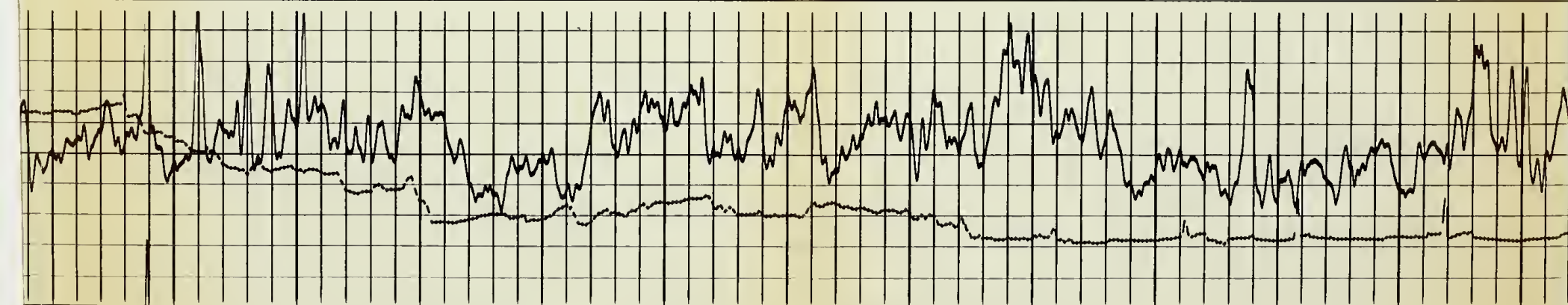
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0700

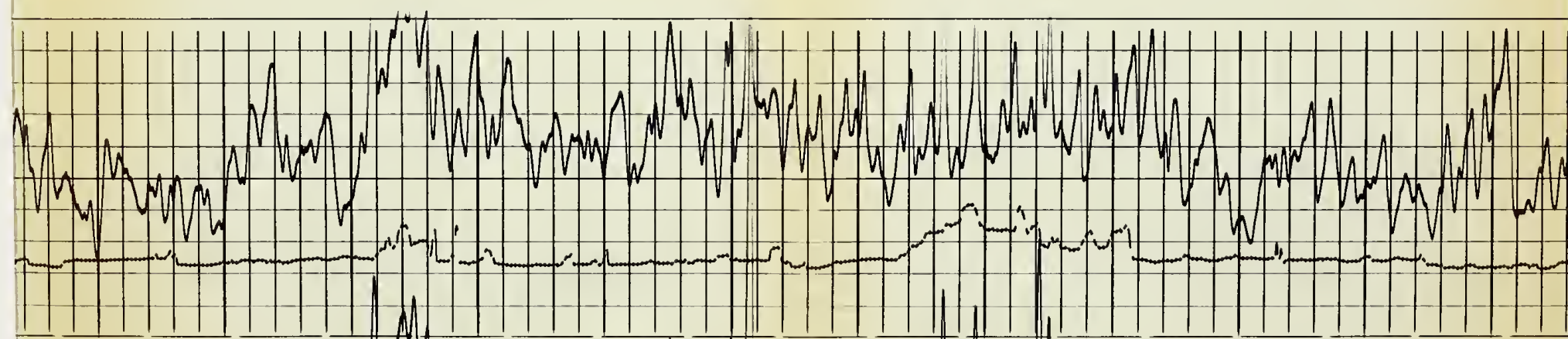
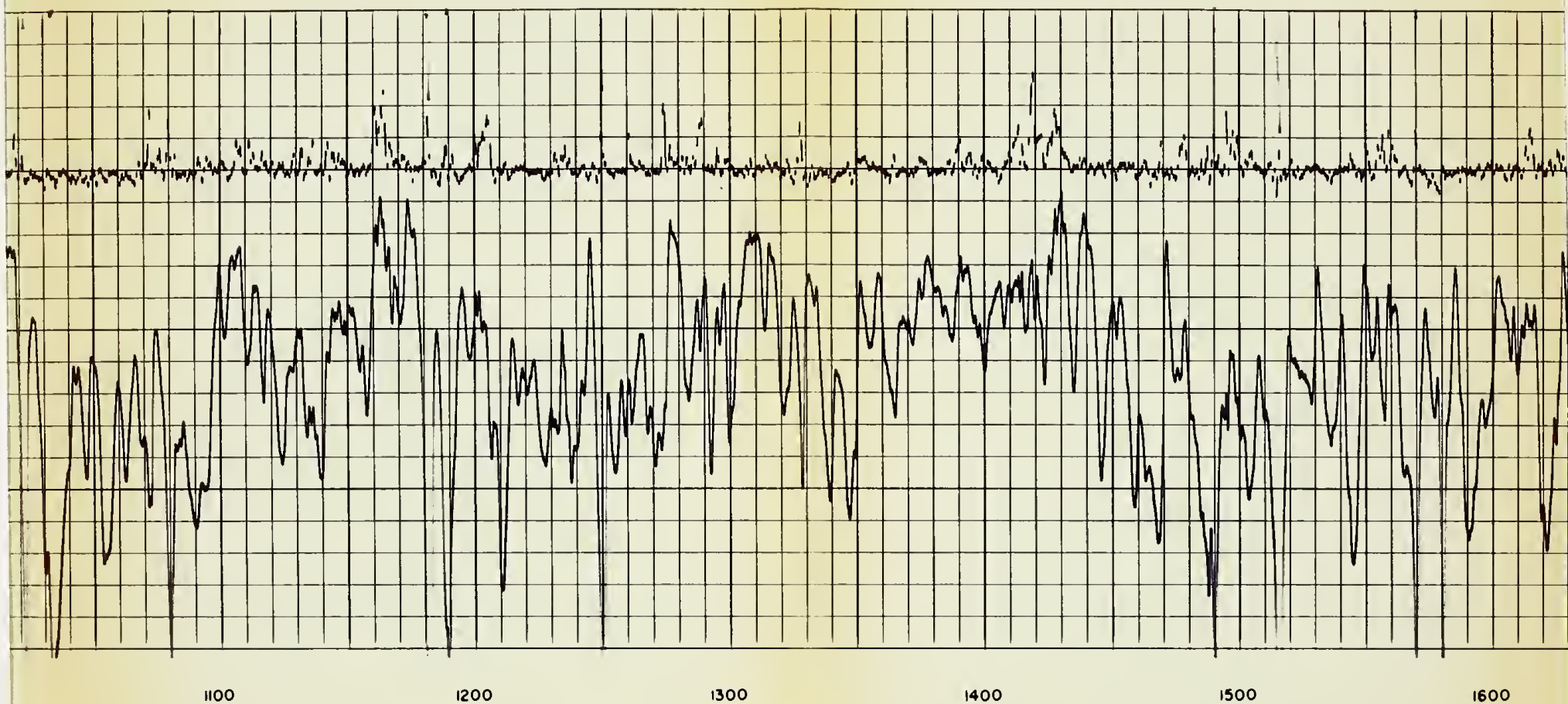
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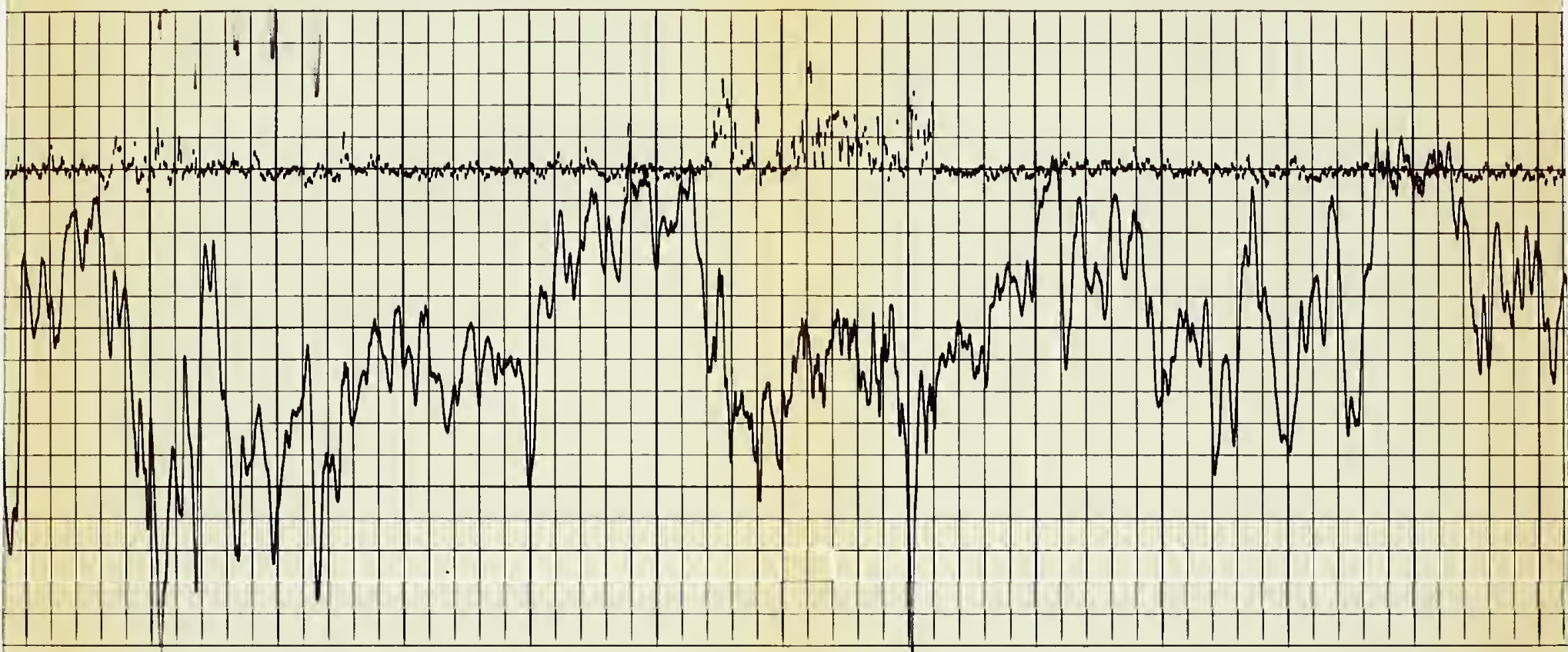
0900

1000









1700

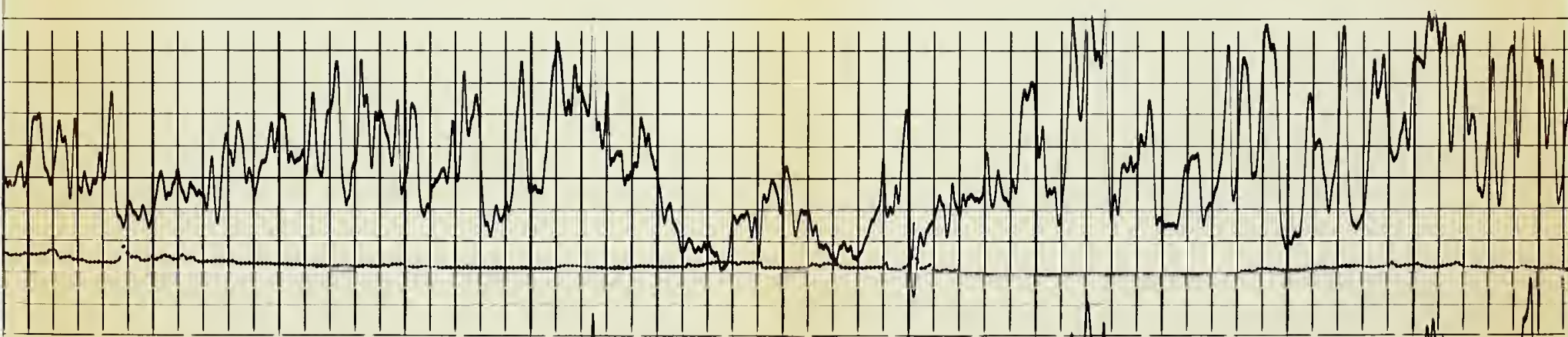
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1900

2000

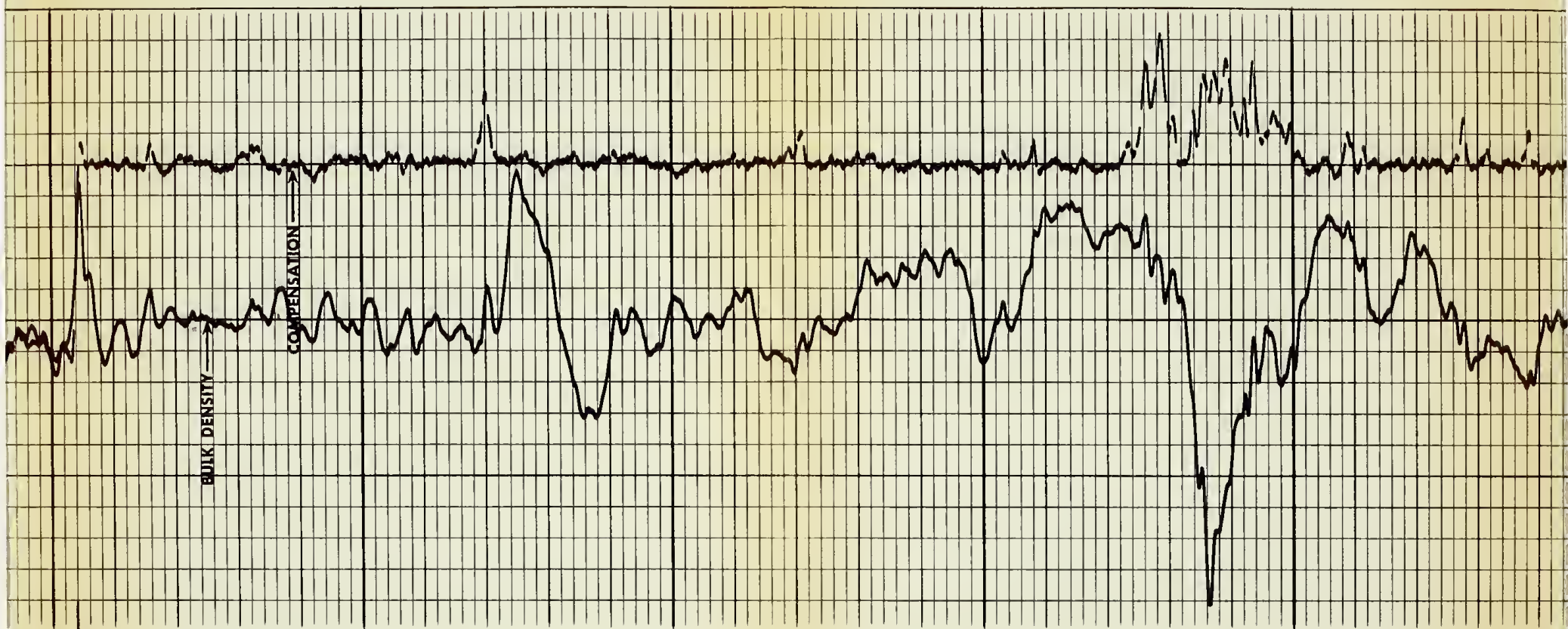
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2200





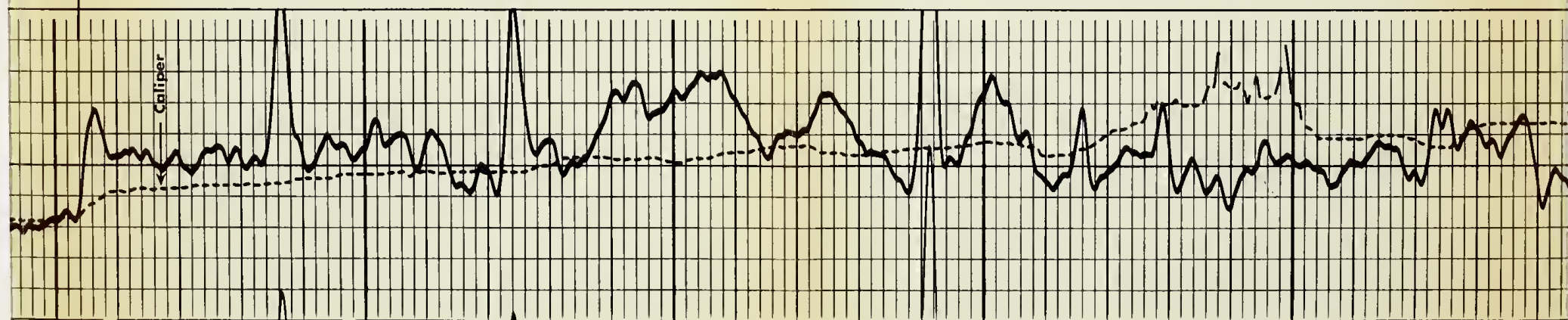




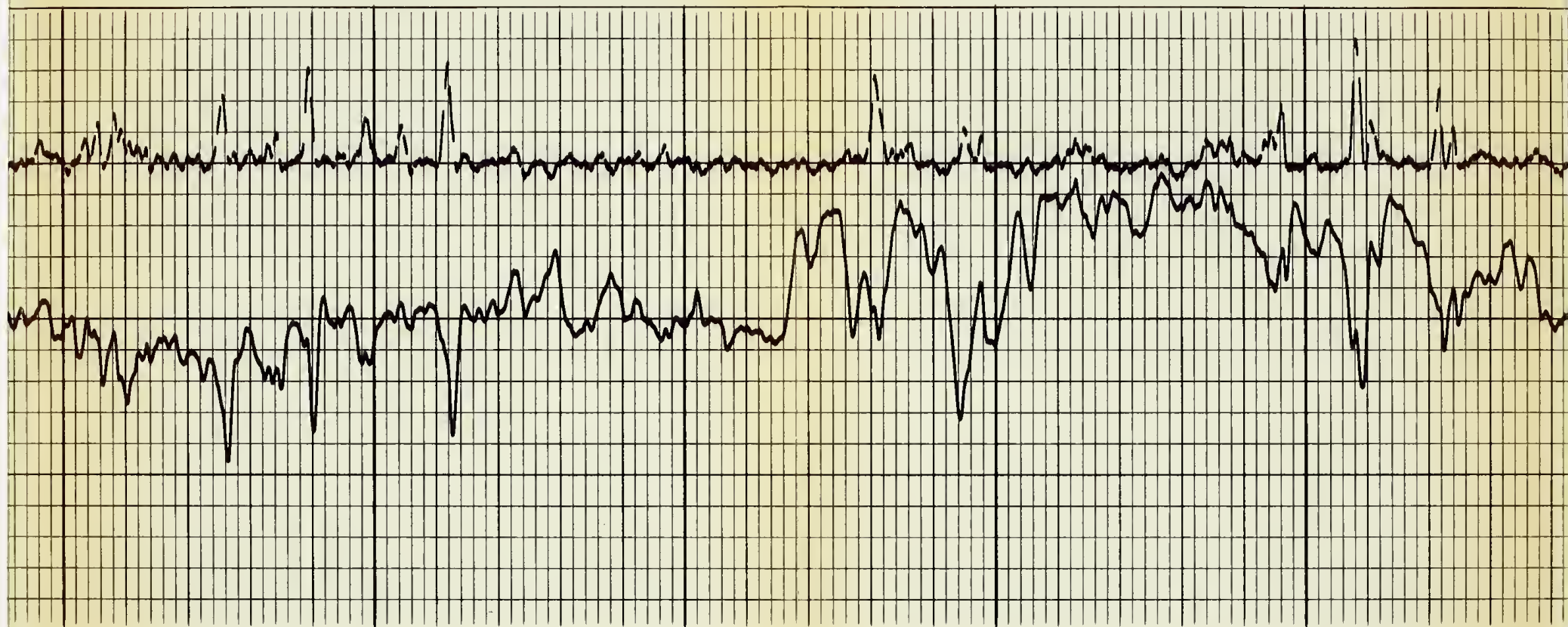
Casing

0200

0300



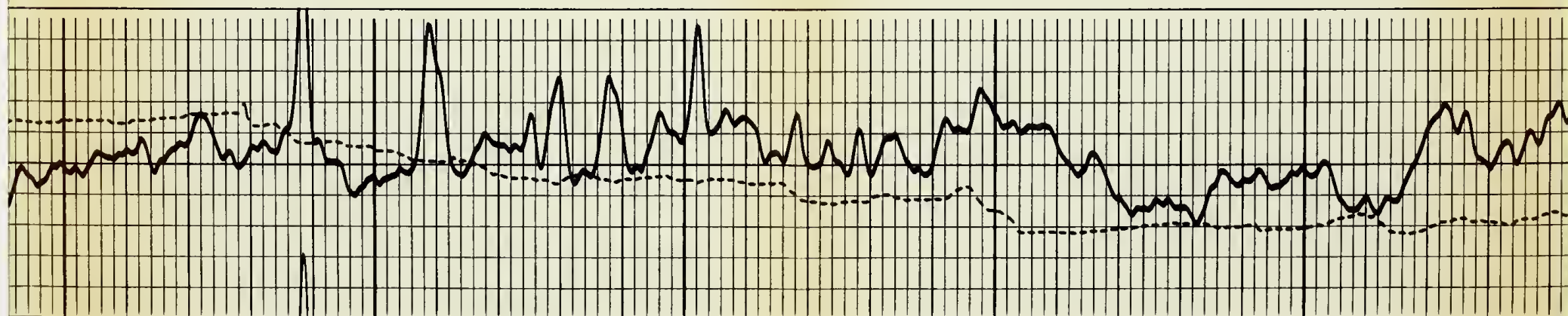


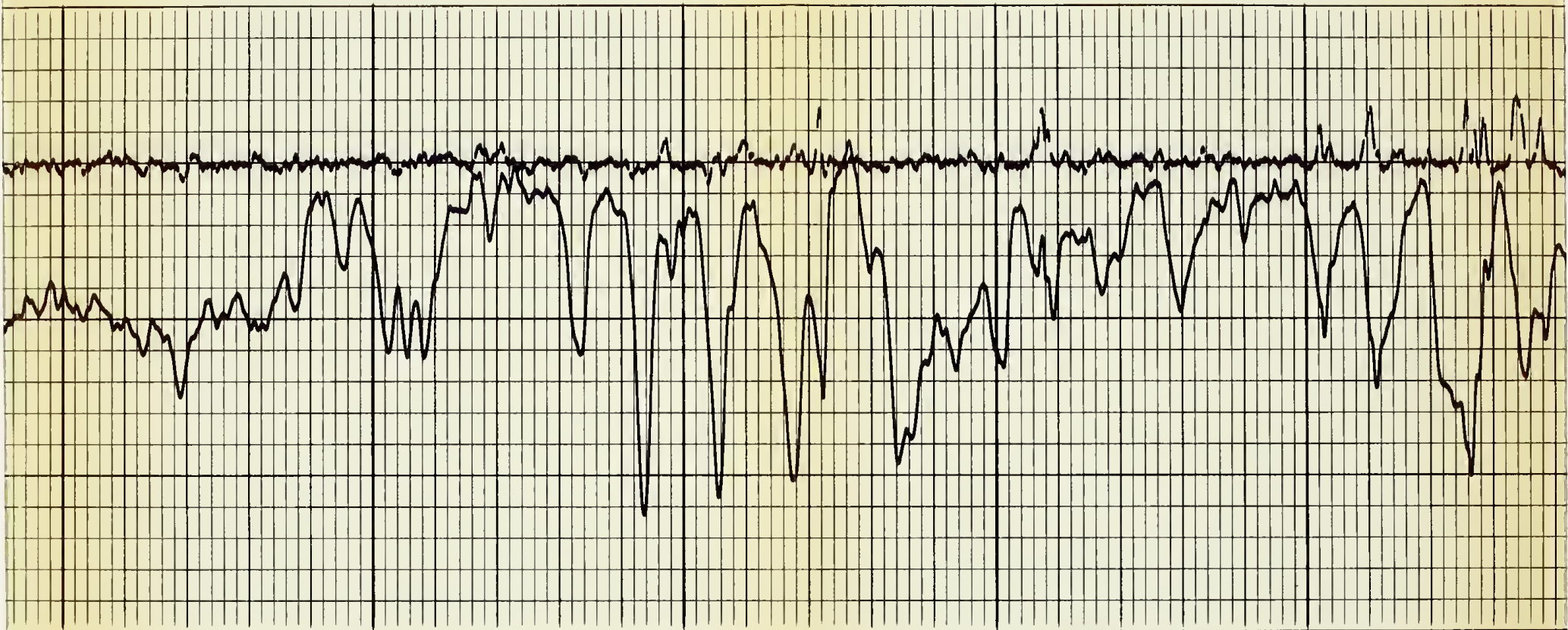


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0500

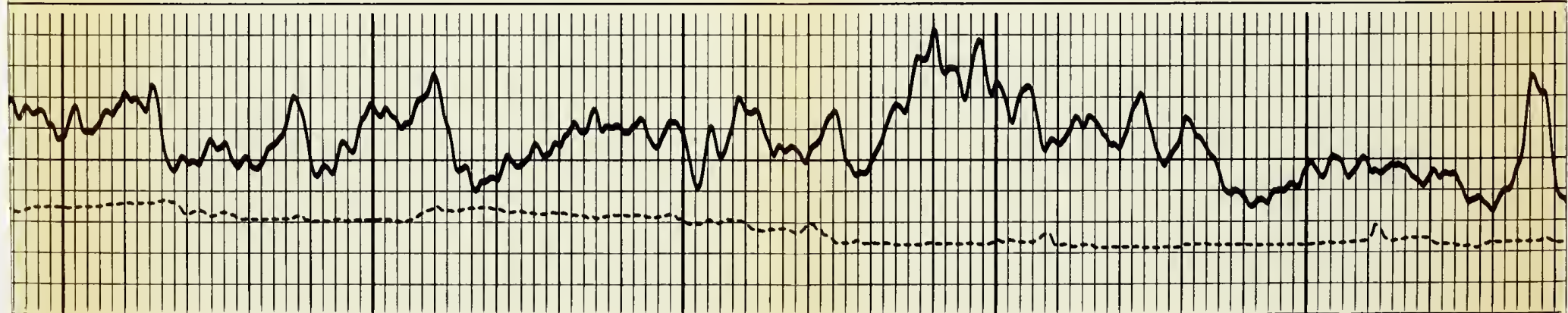
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0700

0800



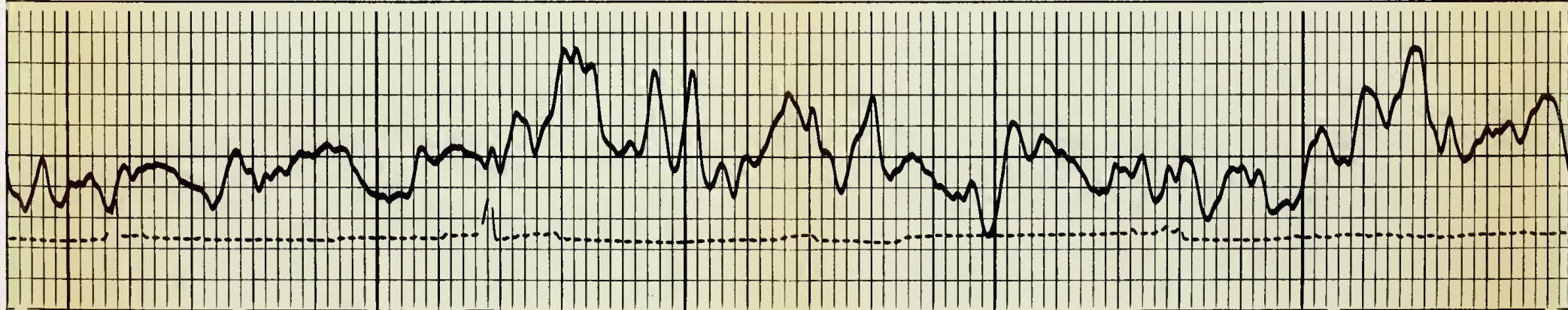


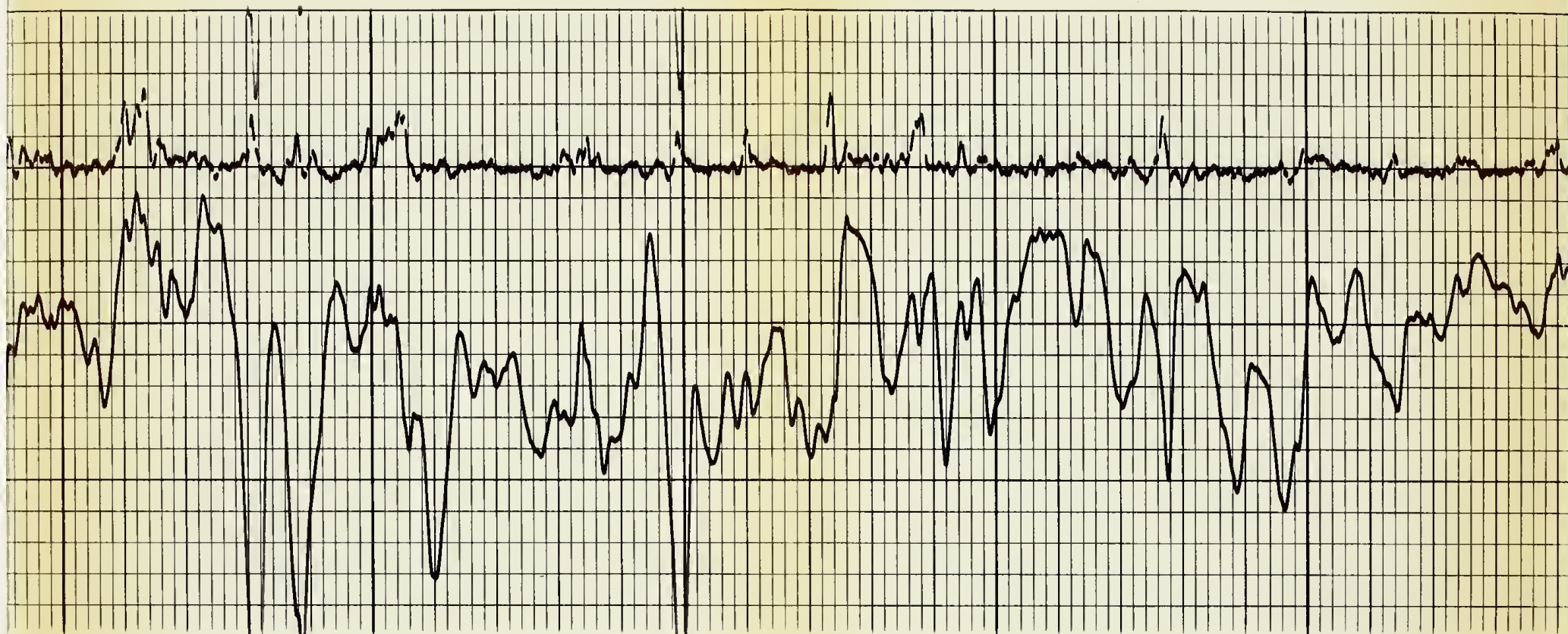


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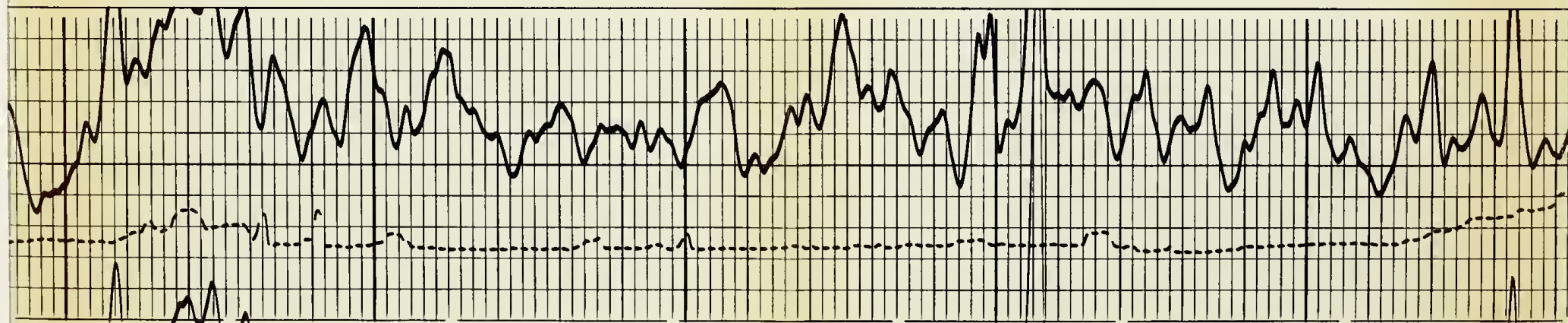
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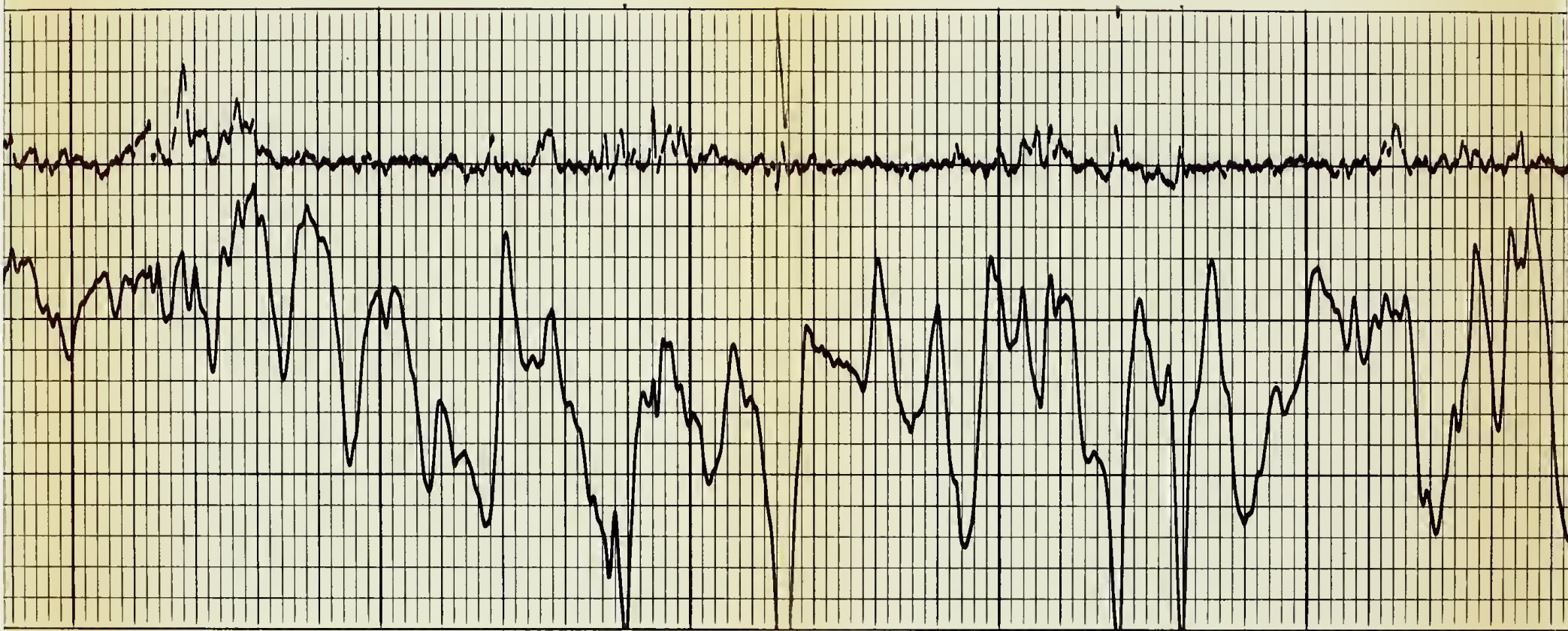


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1300



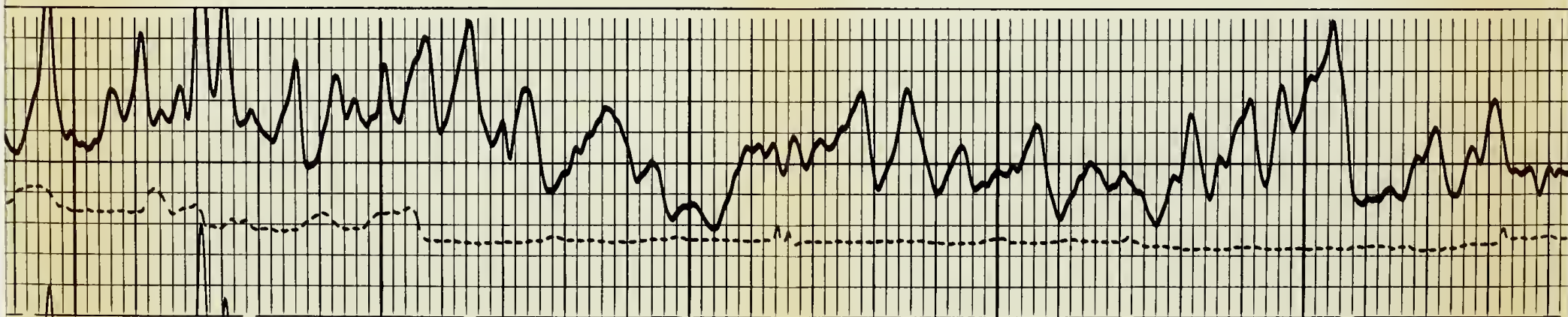


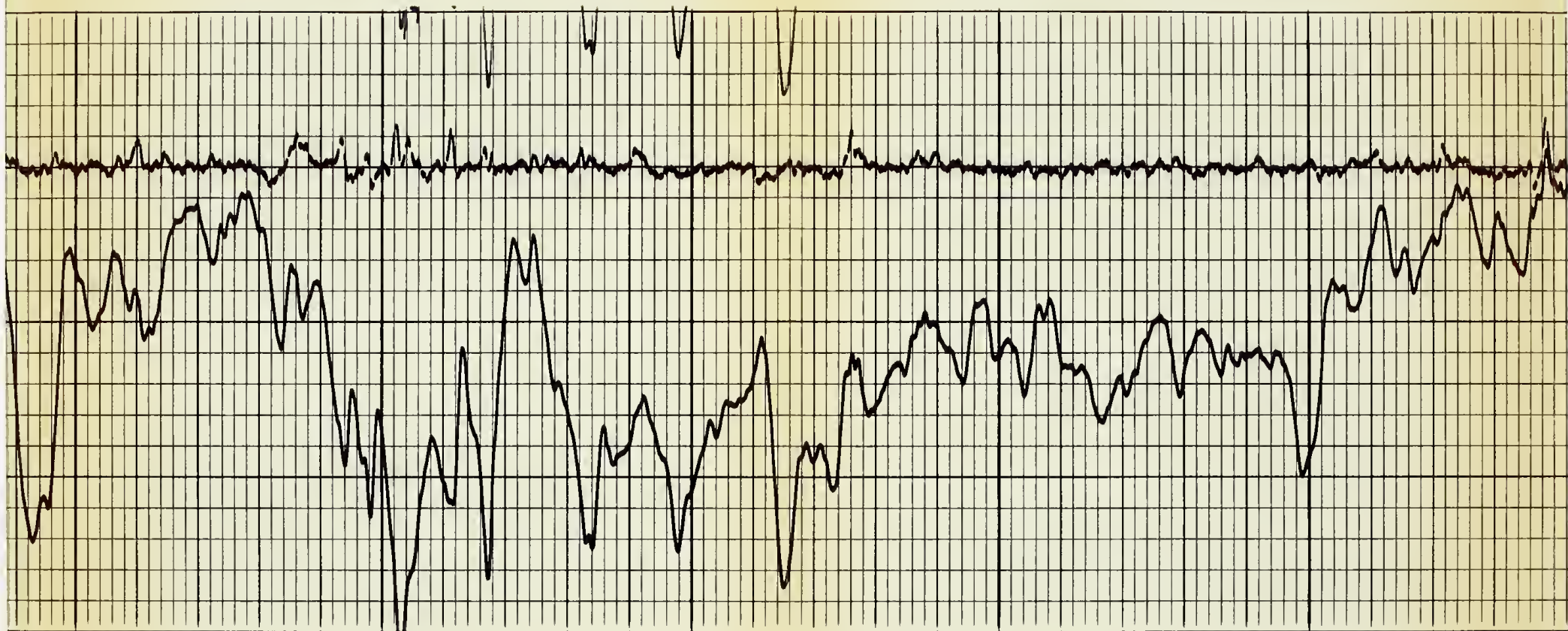


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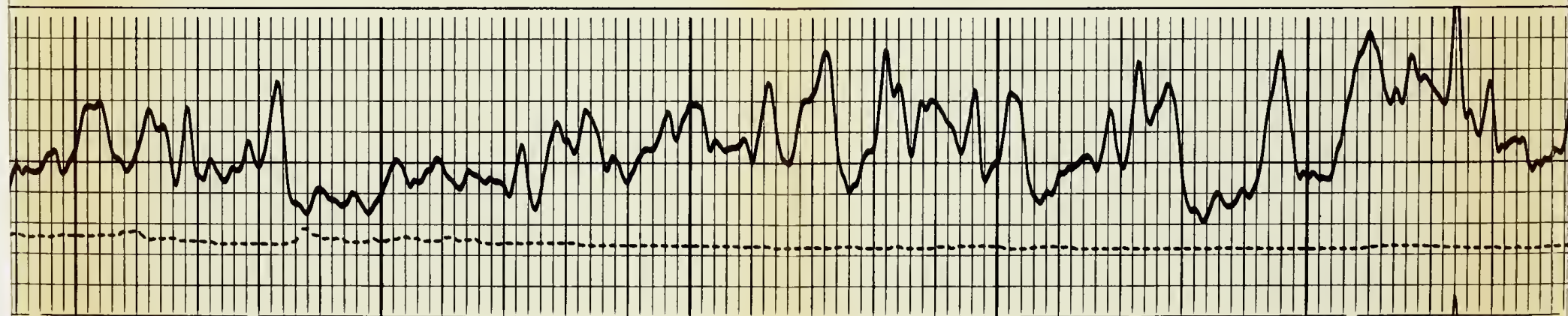
1600



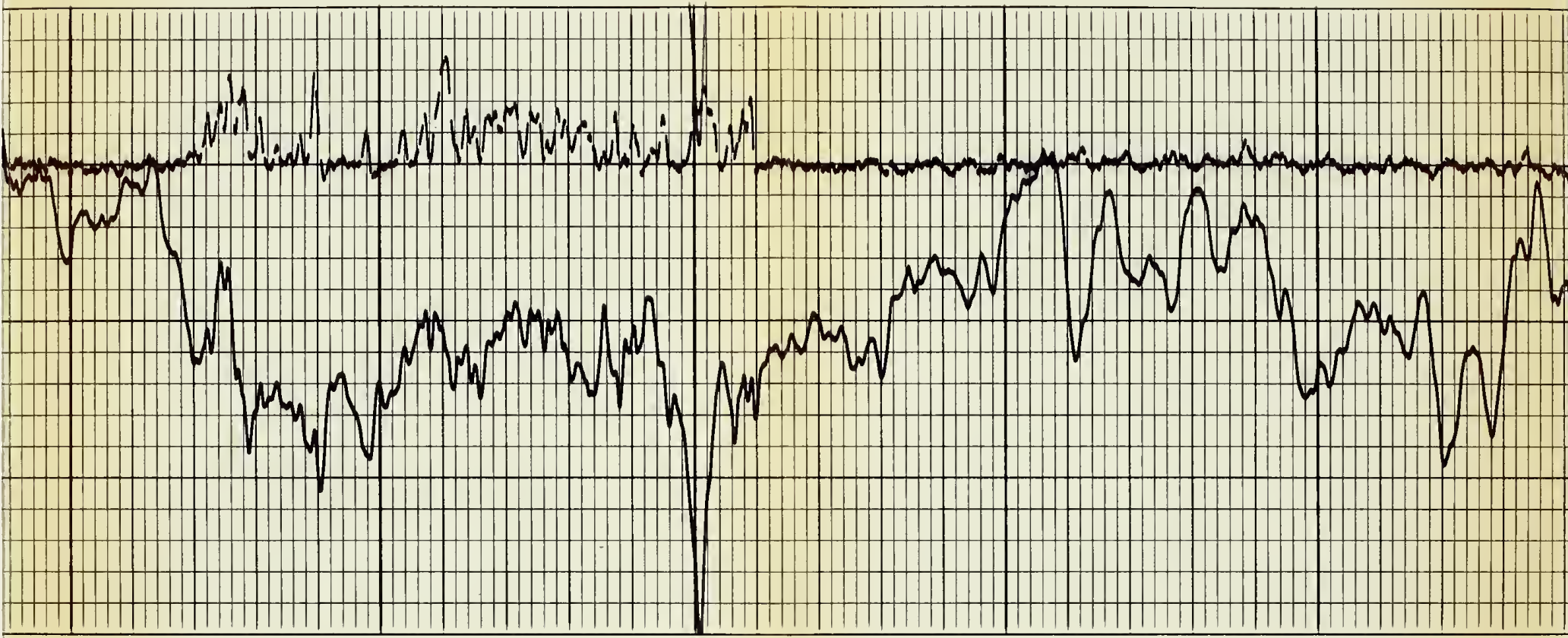


1700

1800



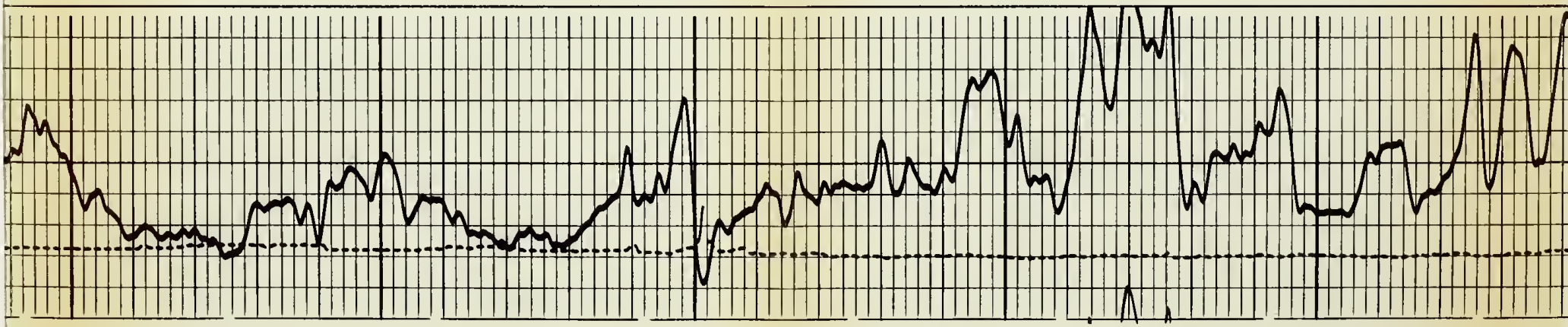


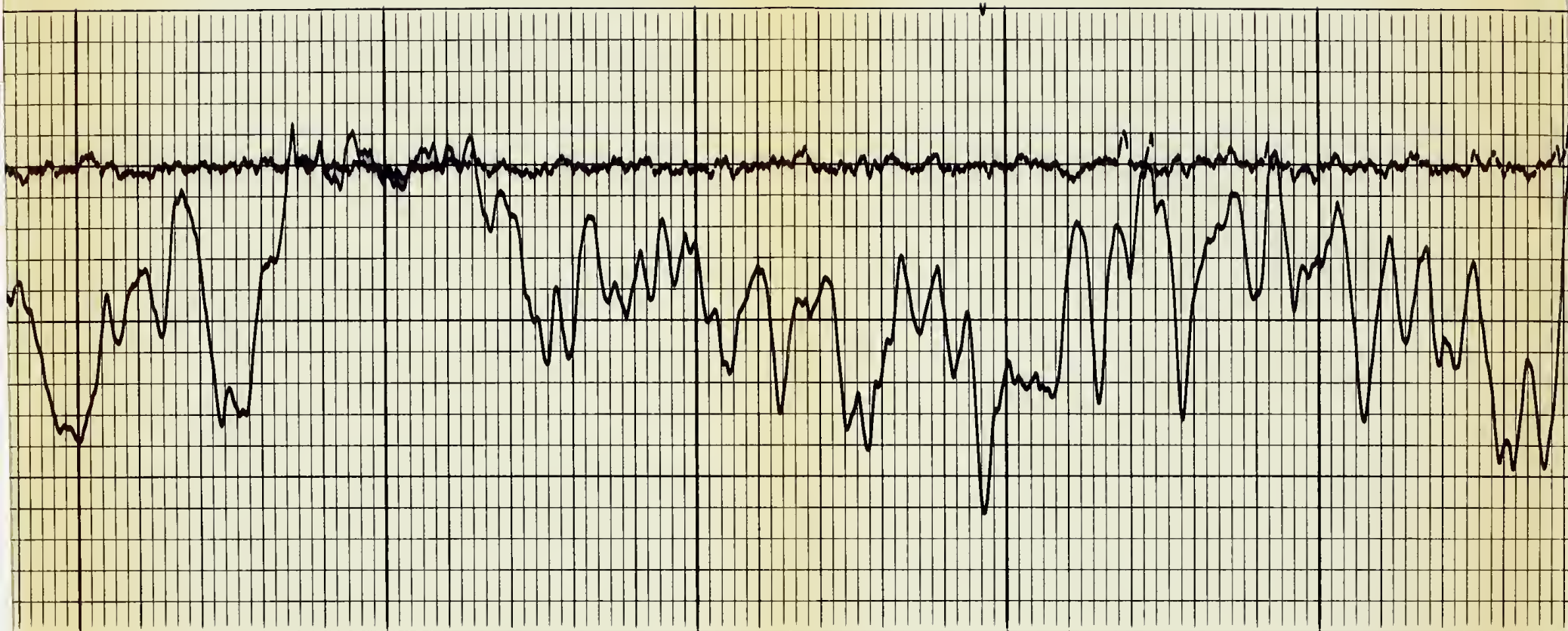


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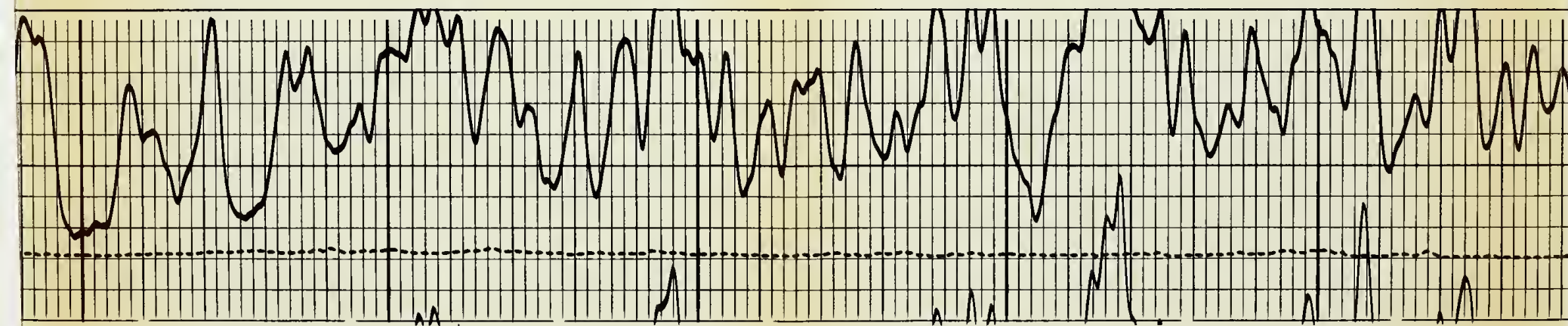
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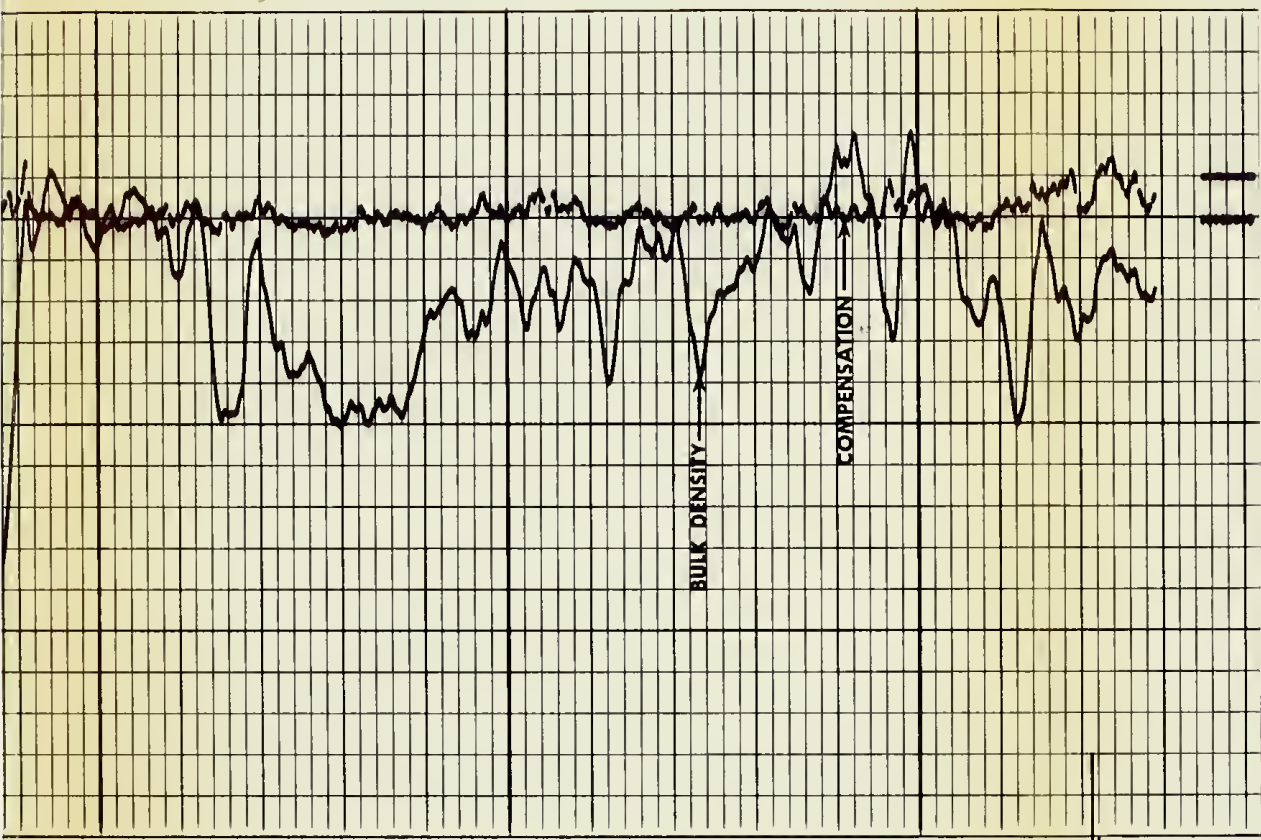


2200

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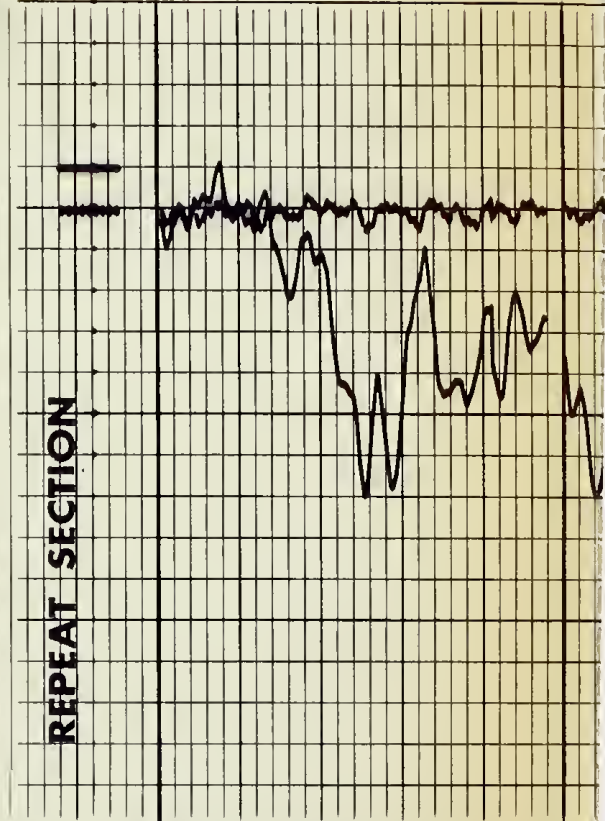
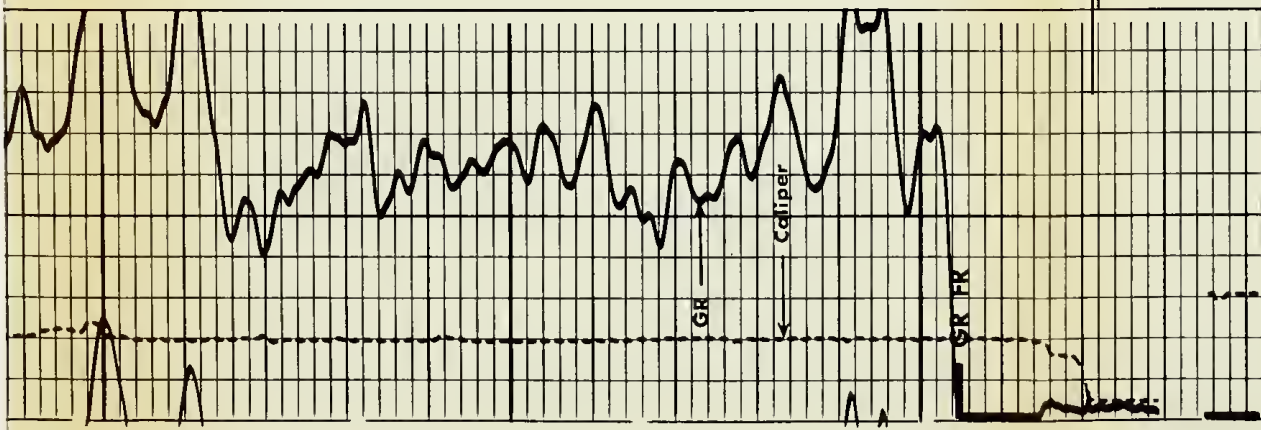






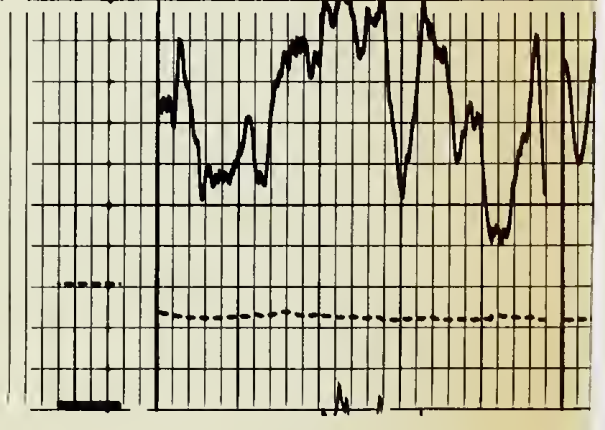
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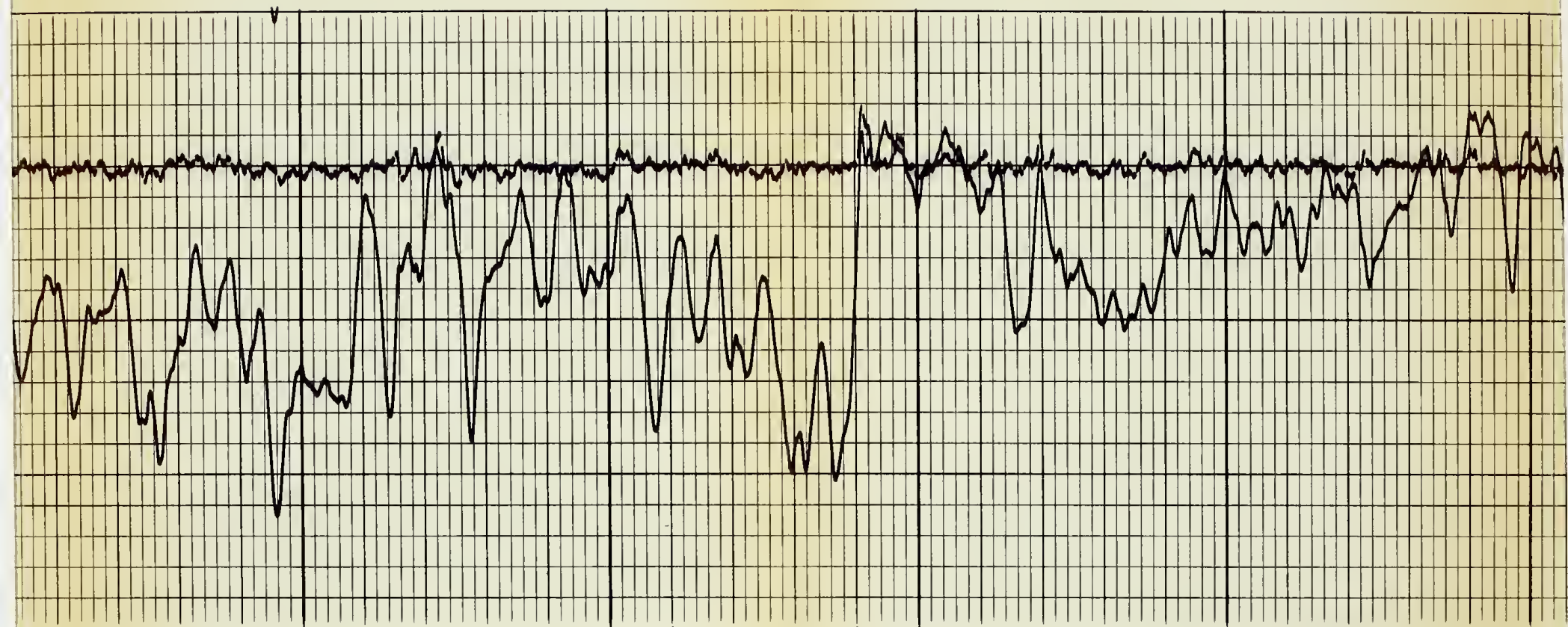
2500



REPEAT SECTION

MEMORIZER OUT — CURVES INVALID

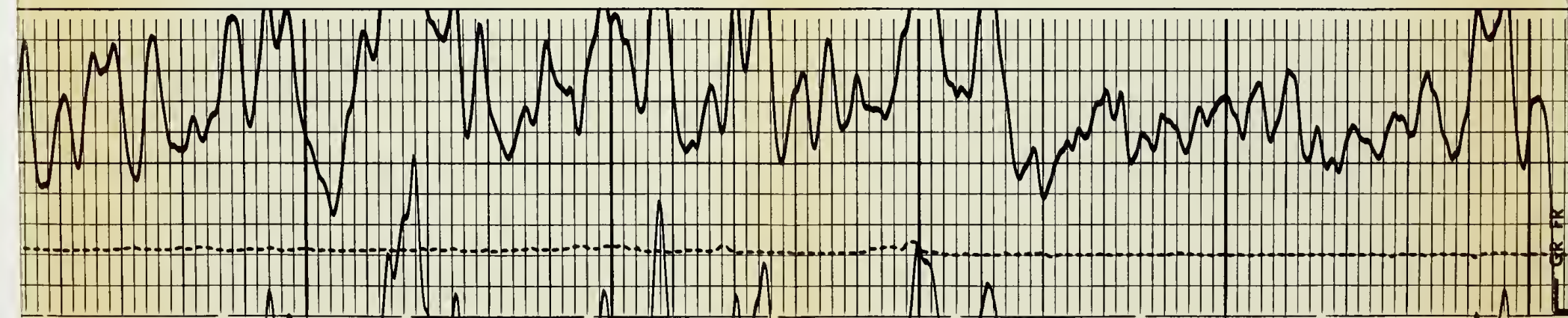




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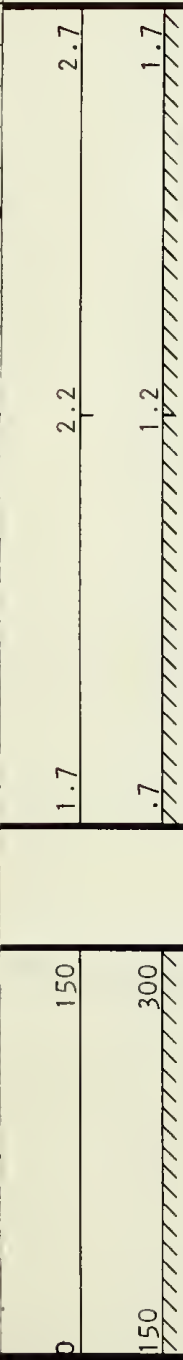
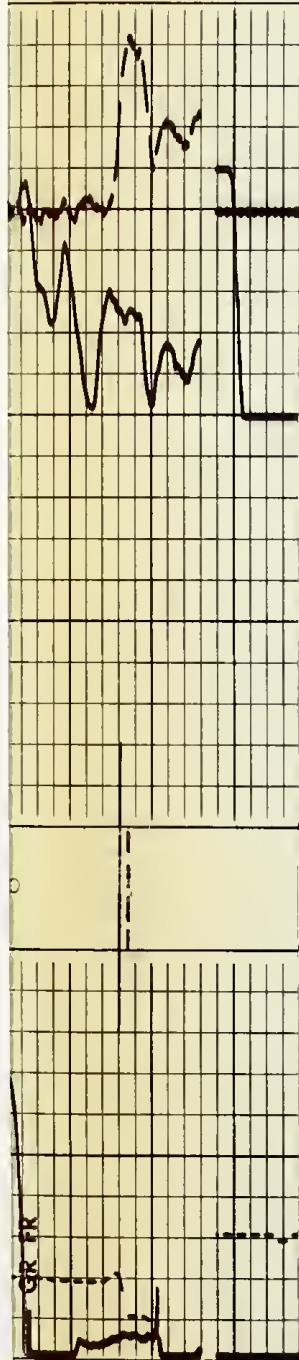
2400

2500



GR FR





**GAMMA RAY**  
API UNITS

**BULK DENSITY**  
GRAMS/CC.

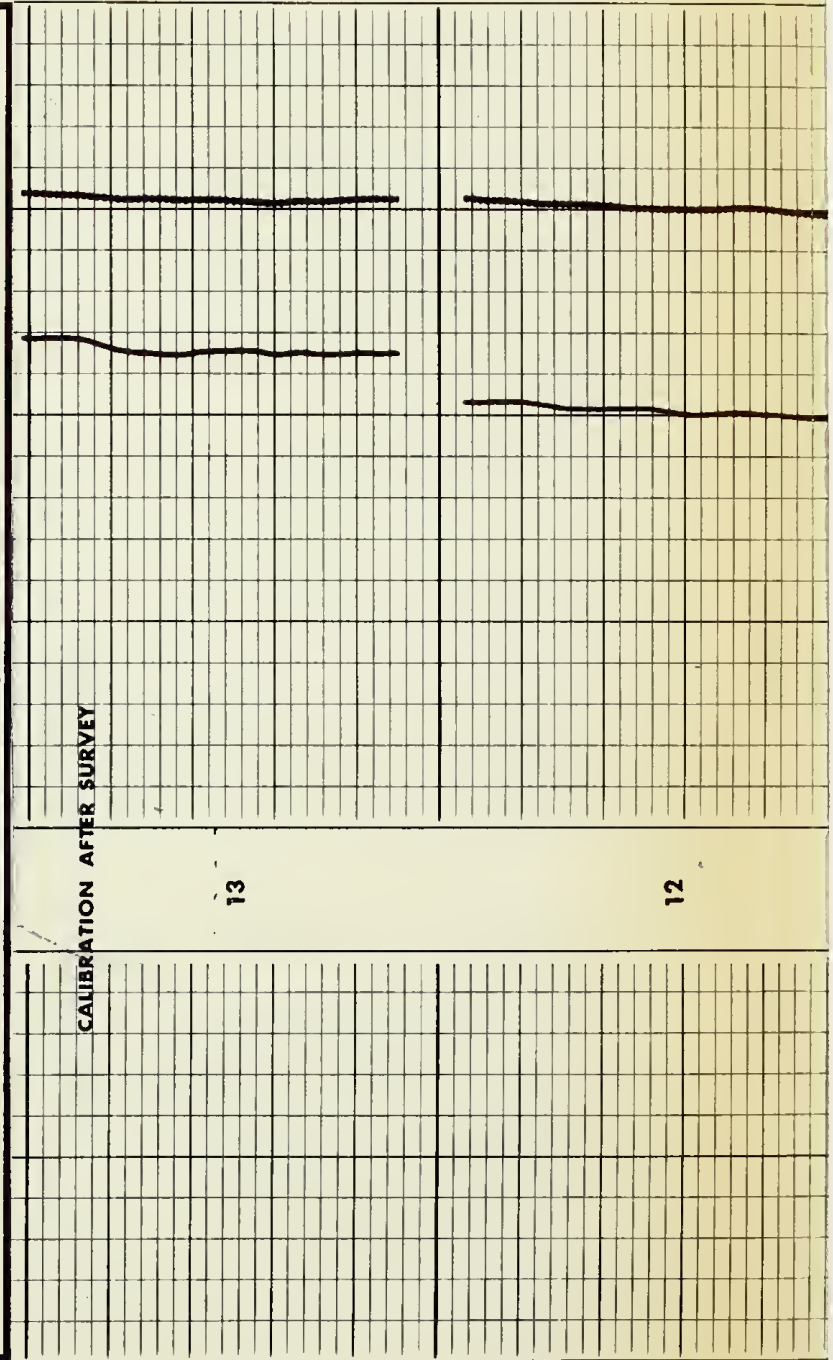
**CALIPER**  
HOLE DIAM. IN INCHES

**CORRECTION**  
GRAMS/CC.

COMPANY ATLANTIC RICHFIELD COMPANY Rm \_\_\_\_\_  
WELL SORGHUM GULCH #1  
FIELD SORGHUM GULCH  
COUNTY RIO BLANCO STATE COLORADO

SCHL. FR 2525  
SCHL. TD 2522  
DRLR TD 2521  
Elev: KB 6436.5  
DF 6435.5  
GL 6428

**CALIBRATION RECORD**



11

CALIBRATION BEFORE SURVEY

13

12

11

10

CALIPER CHECK IN CASING



9

8

7

6

5

4

3

2

1

6

PANEL FUNCTION FORMER CHECKS

G. R. SURFACE CALIBRATION

5

4

3

2

1

11/30/74  
BLUE SET  
PDH-Q 320  
SFT-106 544

COUNTS:  
PI 372  
P 153  
2

13

12



# FORMATION DENSITY COMPENSATED CALIBRATION CODING

1. MECHANICAL ZERO
2. RECORDER SENSITIVITY

## PANEL TEST

### FDC LIQUID

POS	$\rho$	$\Delta \rho$
# 1	2.92	.00
# 2	2.78	+.14
# 3	2.42	-.10
# 4	2.35	.00
# 5	2.08	.01
8. MECHANICAL ZERO CALIPER		
9. 8" RING		
10. 12" RING		
11. TOOL CALIBRATE # 1 SET $\rho = 2.50$		
12. TOOL CALIBRATE # 2 SET $\Delta \rho = .00$		
13. LOG POSITION $\rho = 2.59$ , $\Delta \rho = .015$		

# GAMMA RAY CALIBRATION CODING

1. MECHANICAL ZERO
2. ELECTRICAL ZERO
3. RECORDER SENSITIVITY
4. MEMORIZER ADJUSTMENT
5. BACKGROUND
6. CALIBRATE - SOURCE IN PLACE

## CALIBRATION RECORD

COMPANY ATLANTIC RICHFIELD COMPANY

WELL SORGHUM GULCH #1

FIELD SORGHUM GULCH

COUNTY RIO BLANCO STATE COLORADO

SCHL. FR 2525  
SCHL. TD 2522  
DRLR TD 2521  
Elev: KB 6436.5  
DF 6435.5  
GL 6428

## TEMPERATURE LOG

SW5-268-C

The well name, location and borehole reference data were furnished by the customer.

**FOLD HERE**

REMARKS: TEMPERATURE LOGGED ONE WEEK AFTER OTHER SERVICES- NO RIG ON LOCATION

PPU-A 777K  
HTU-B 730A  
PAH-A 807  
HTS-B 787

[illegible]

### REDUCED SENSITIVITY TEMPERATURE

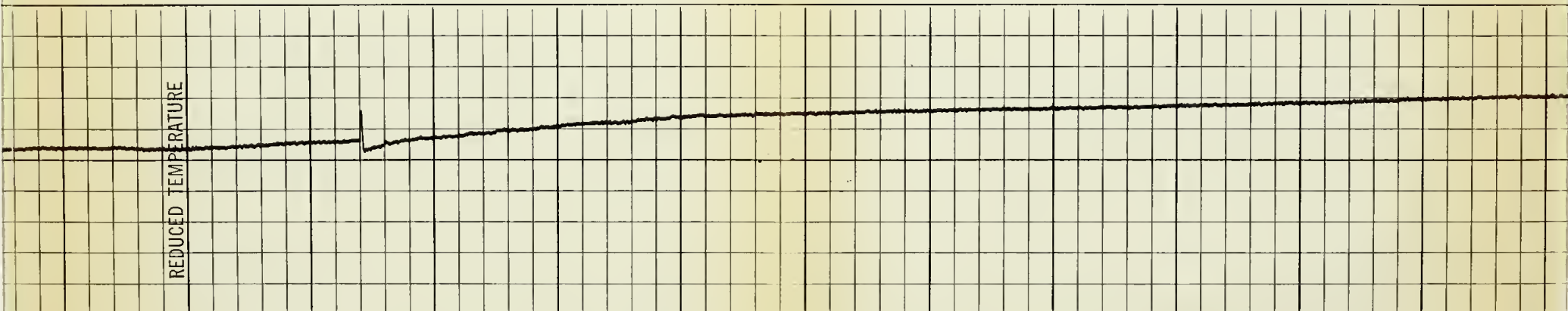
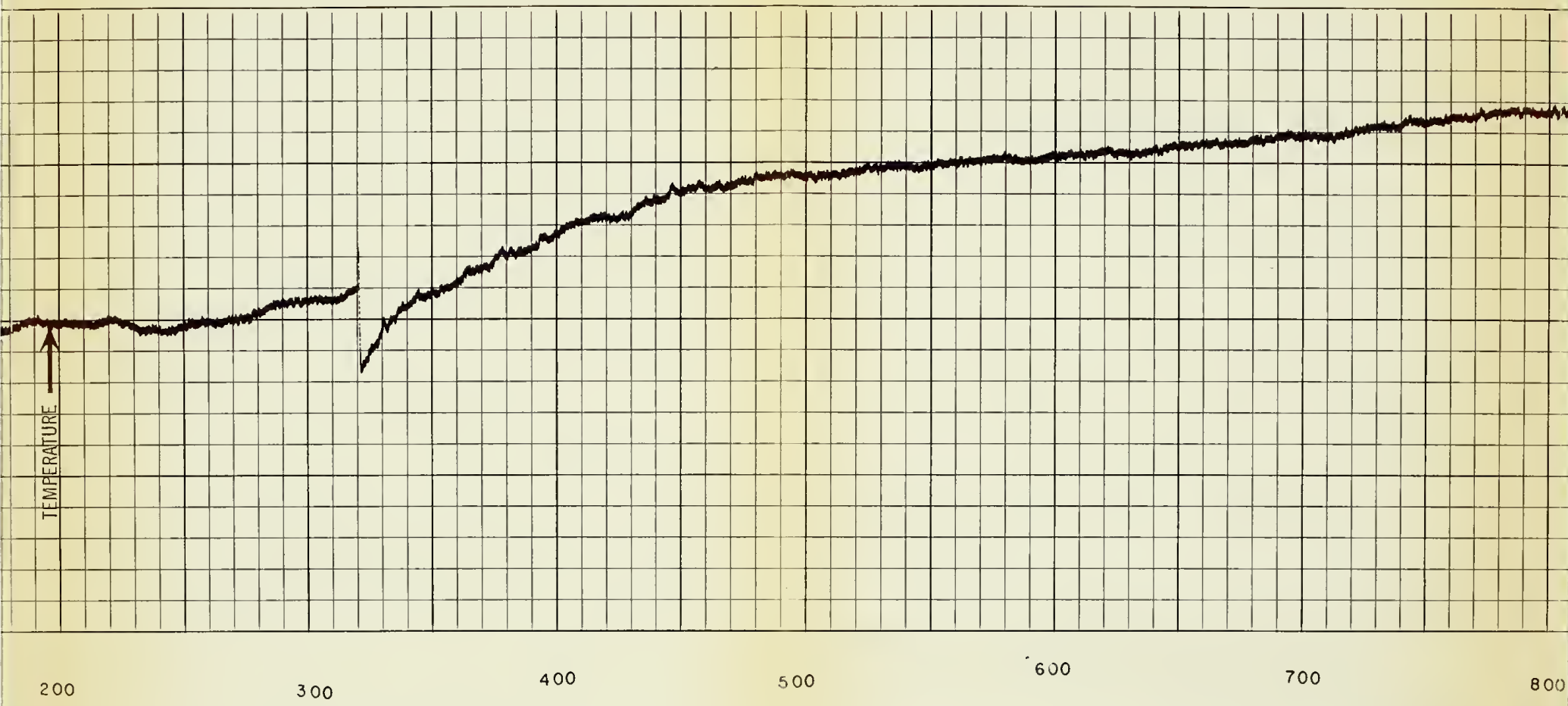
TEMPERATURE °F.

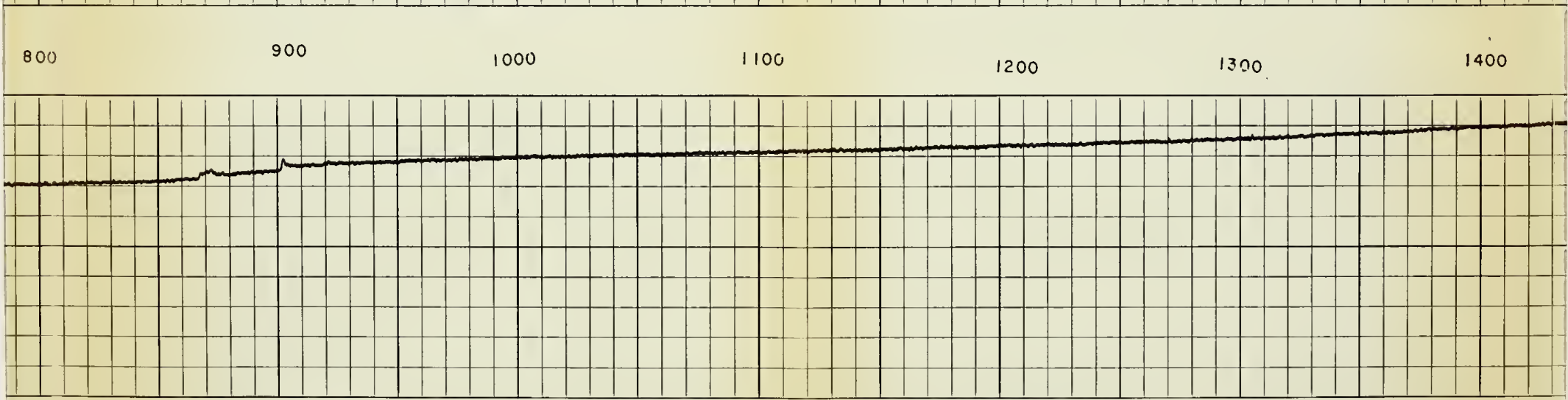
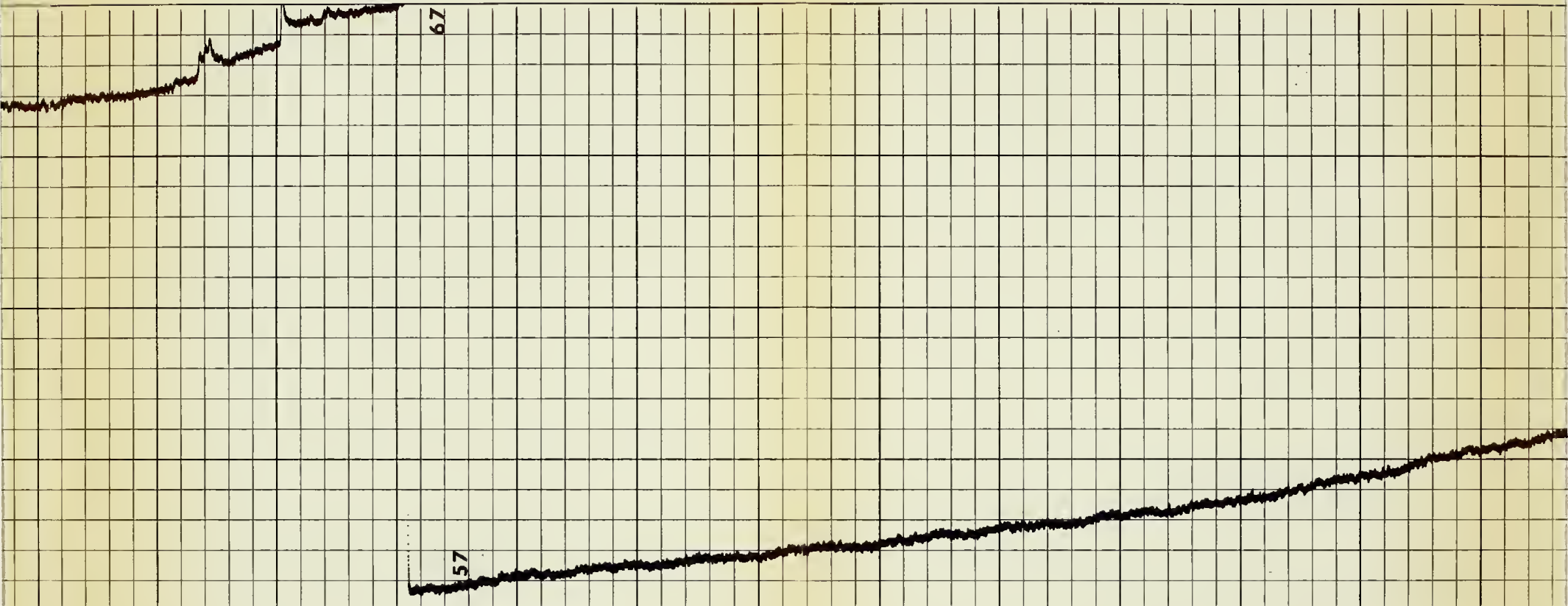
47

57

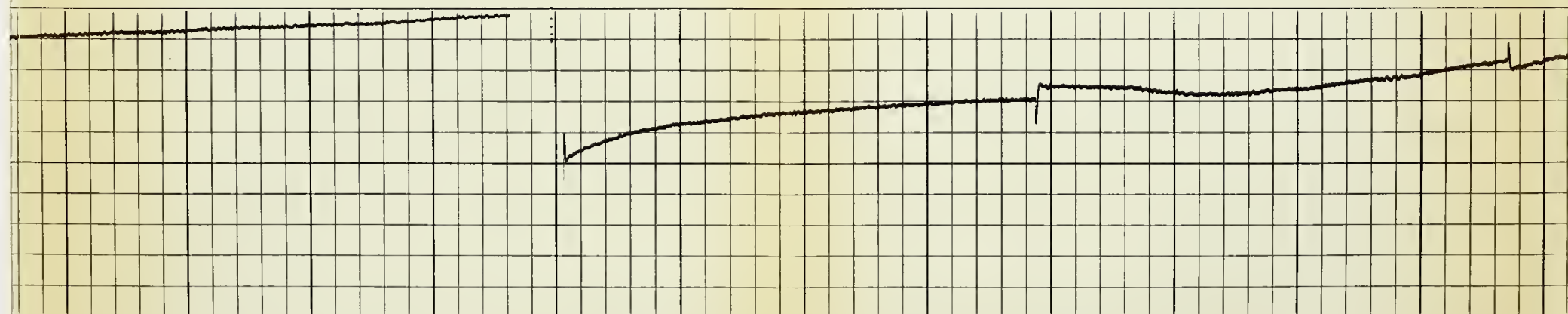
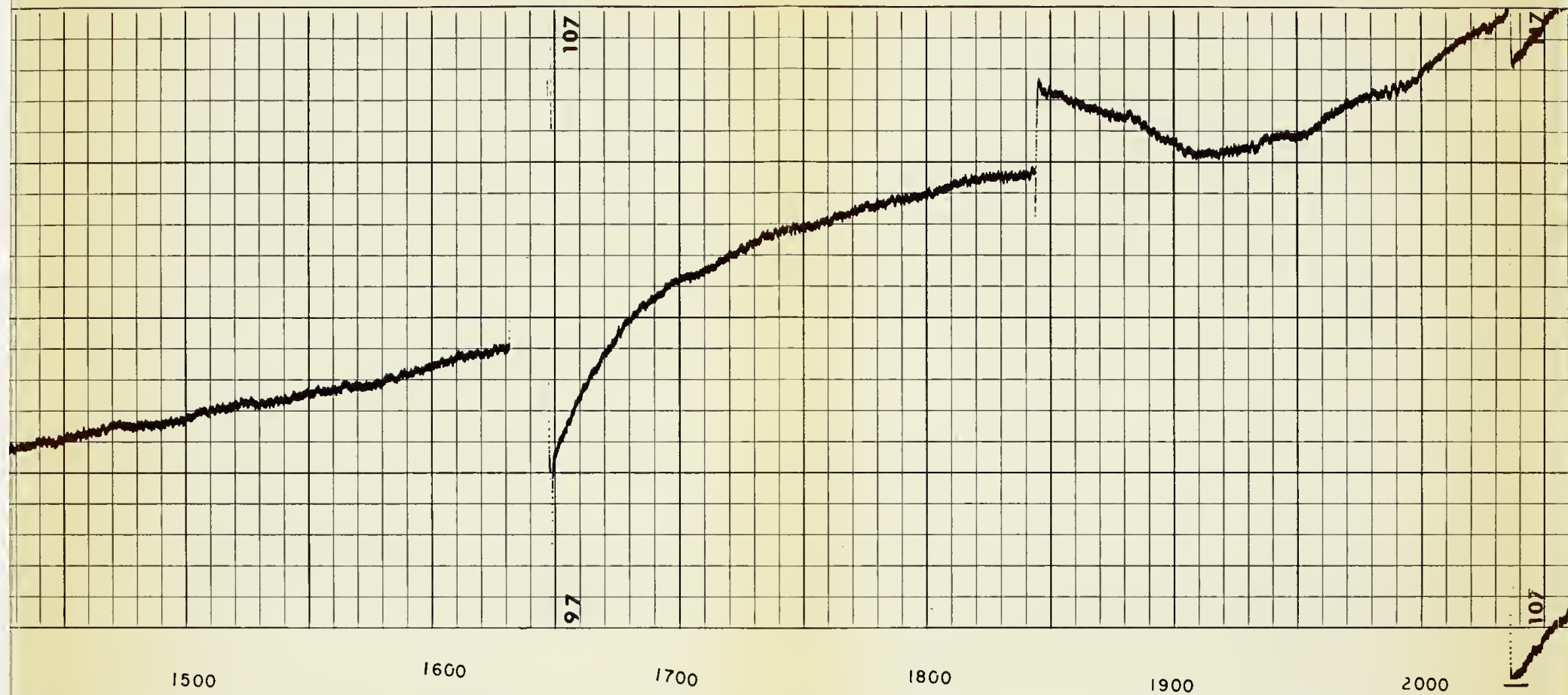
## Casing

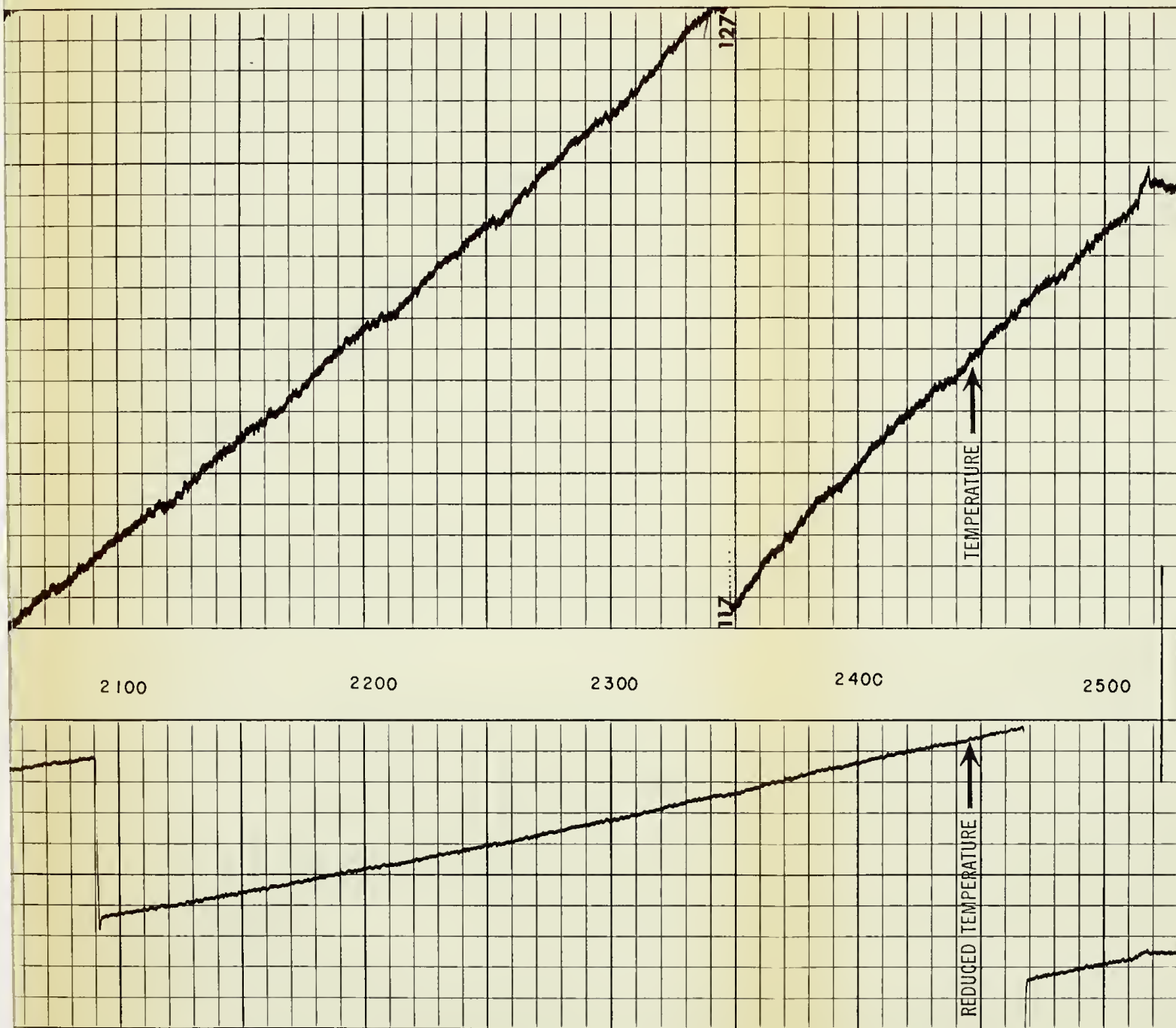






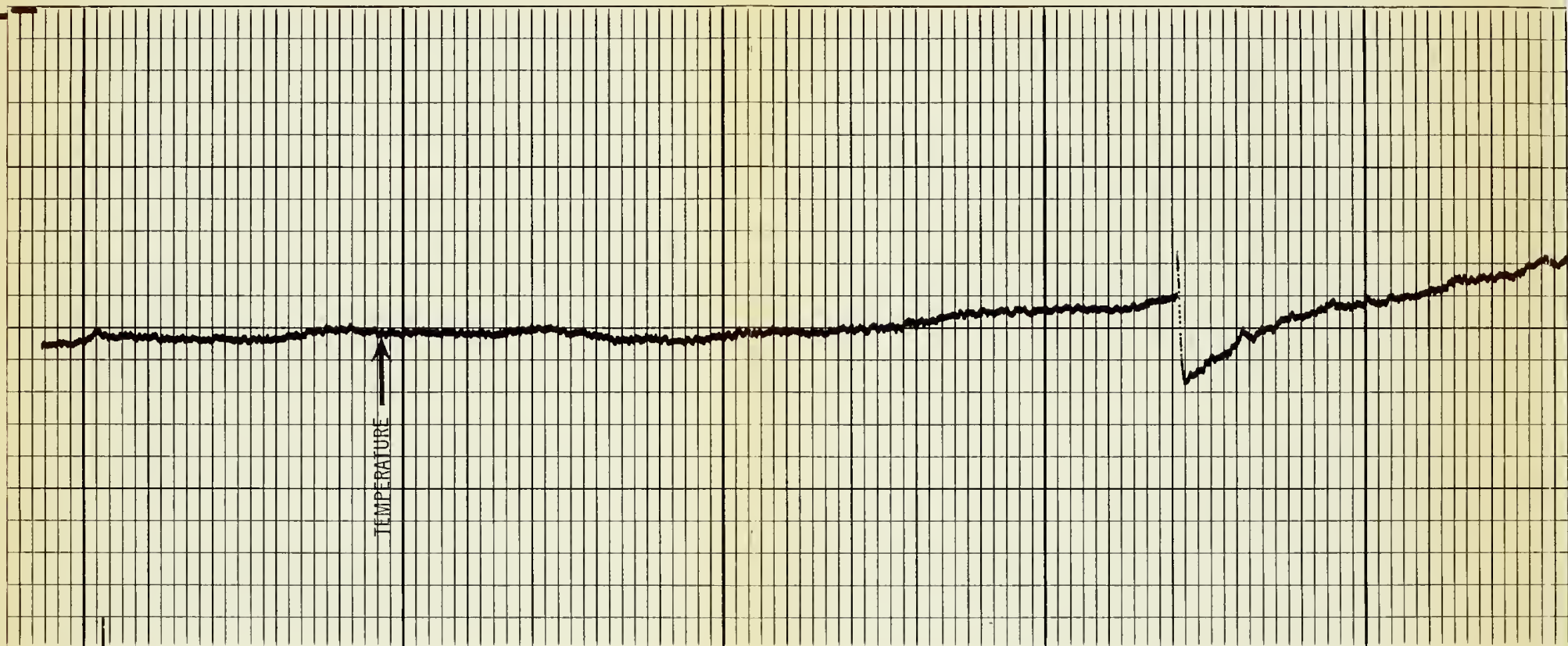






	117	127
TEMPERATURE ° F.		
REDUCED SENSITIVITY TEMPERATURE		
	47	57

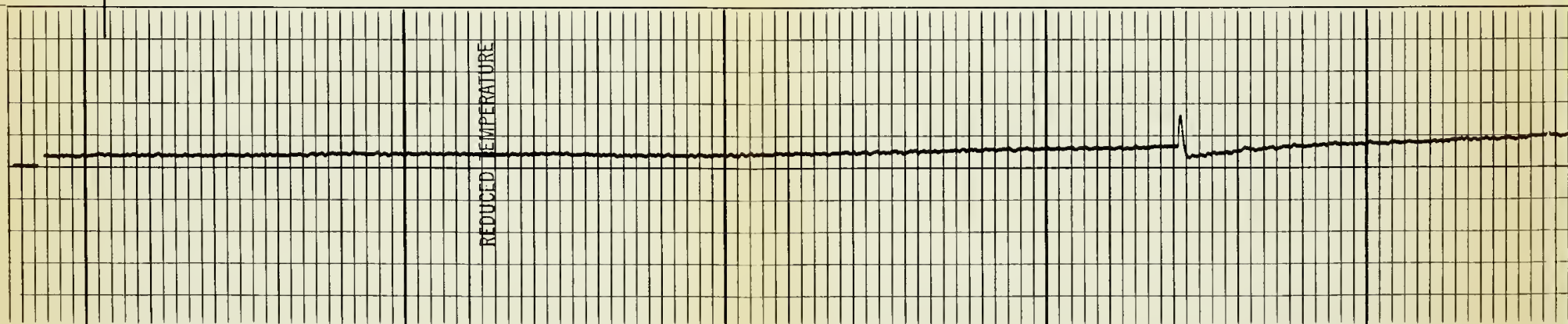


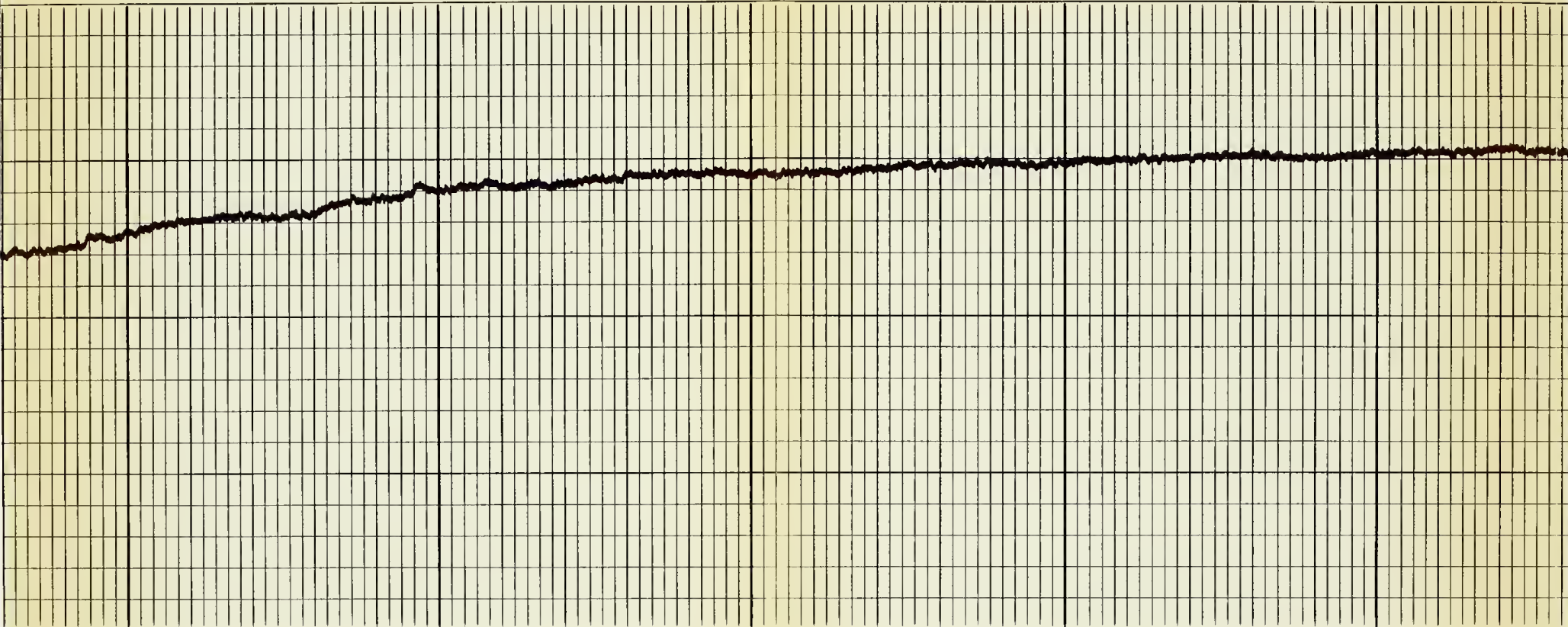


Casing

200

300

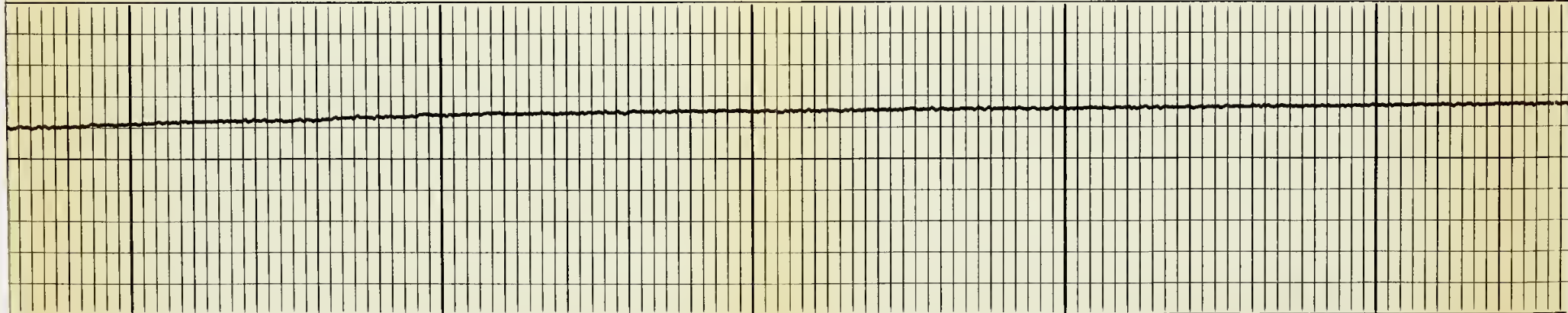




400

500

600

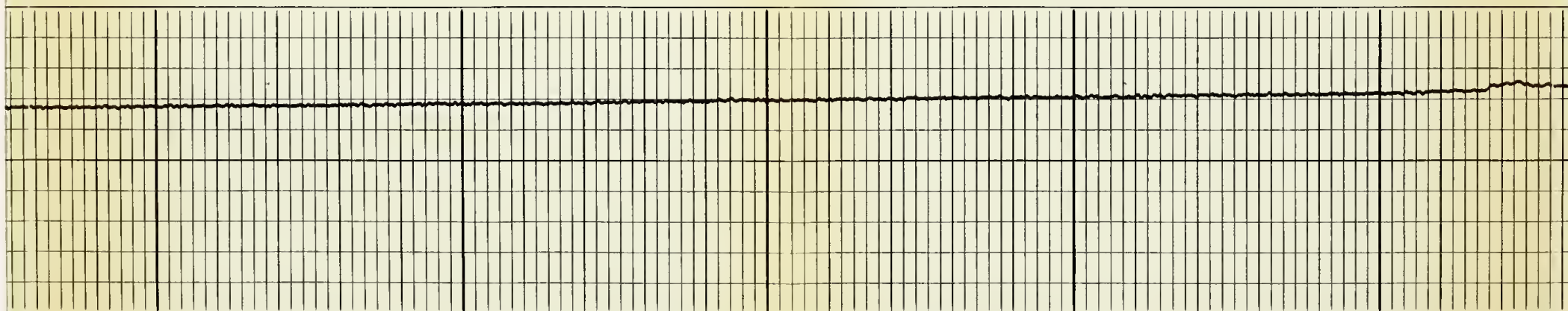


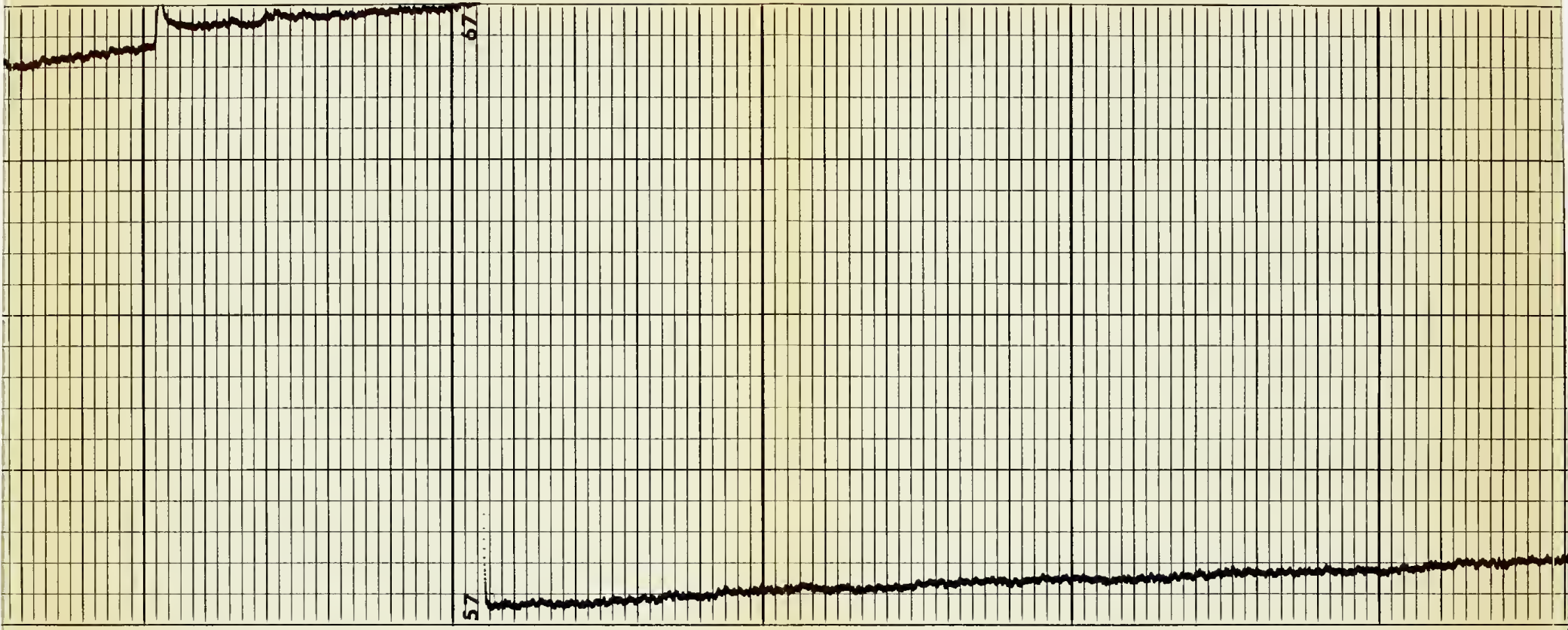




700

800

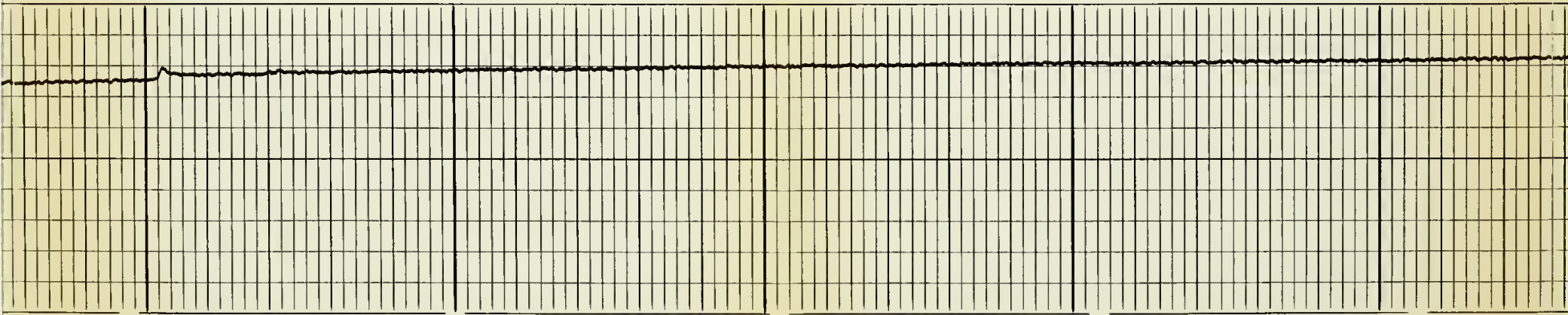




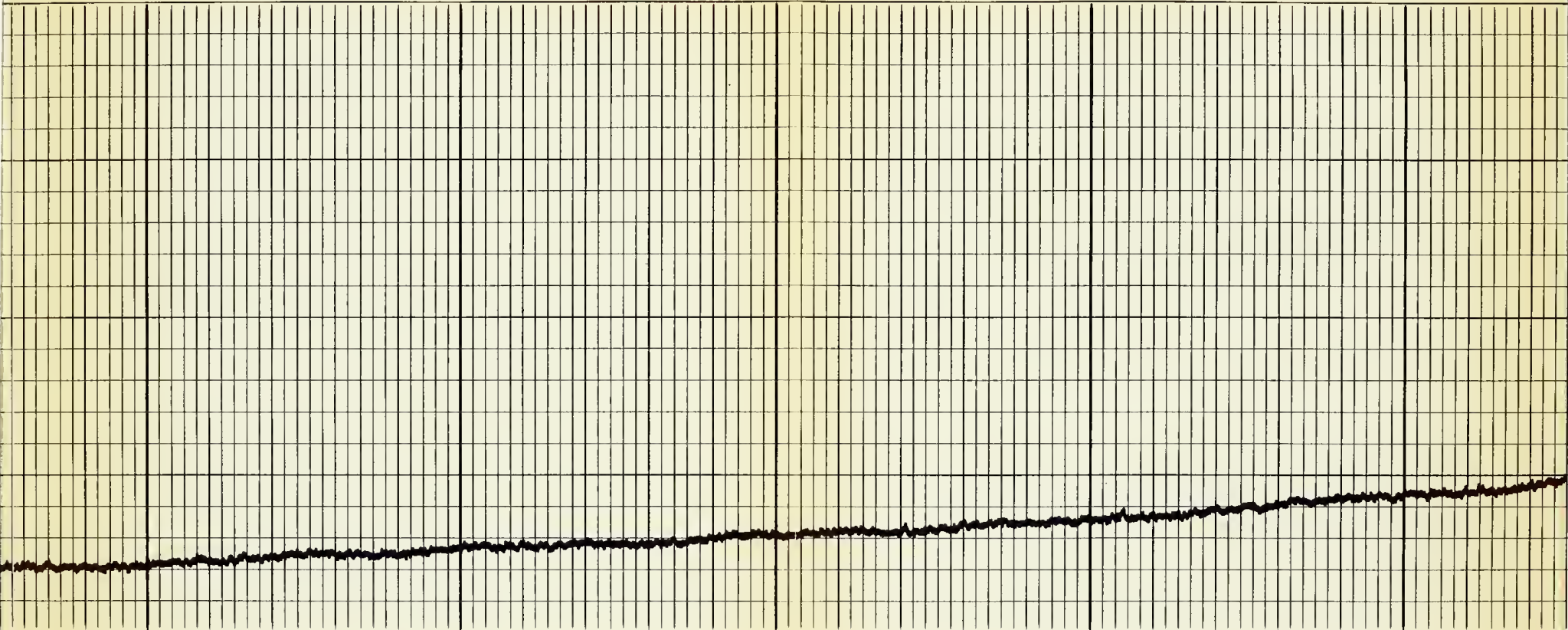
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1000

1100

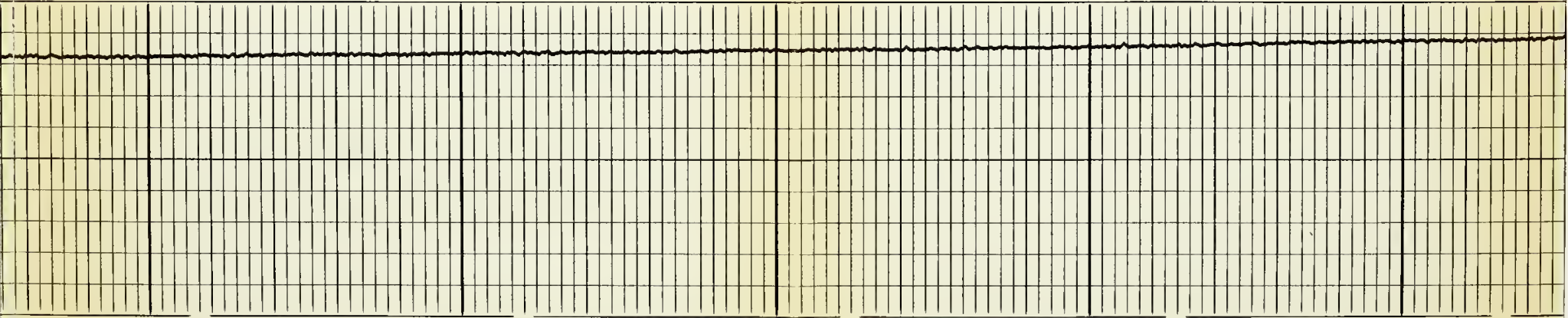


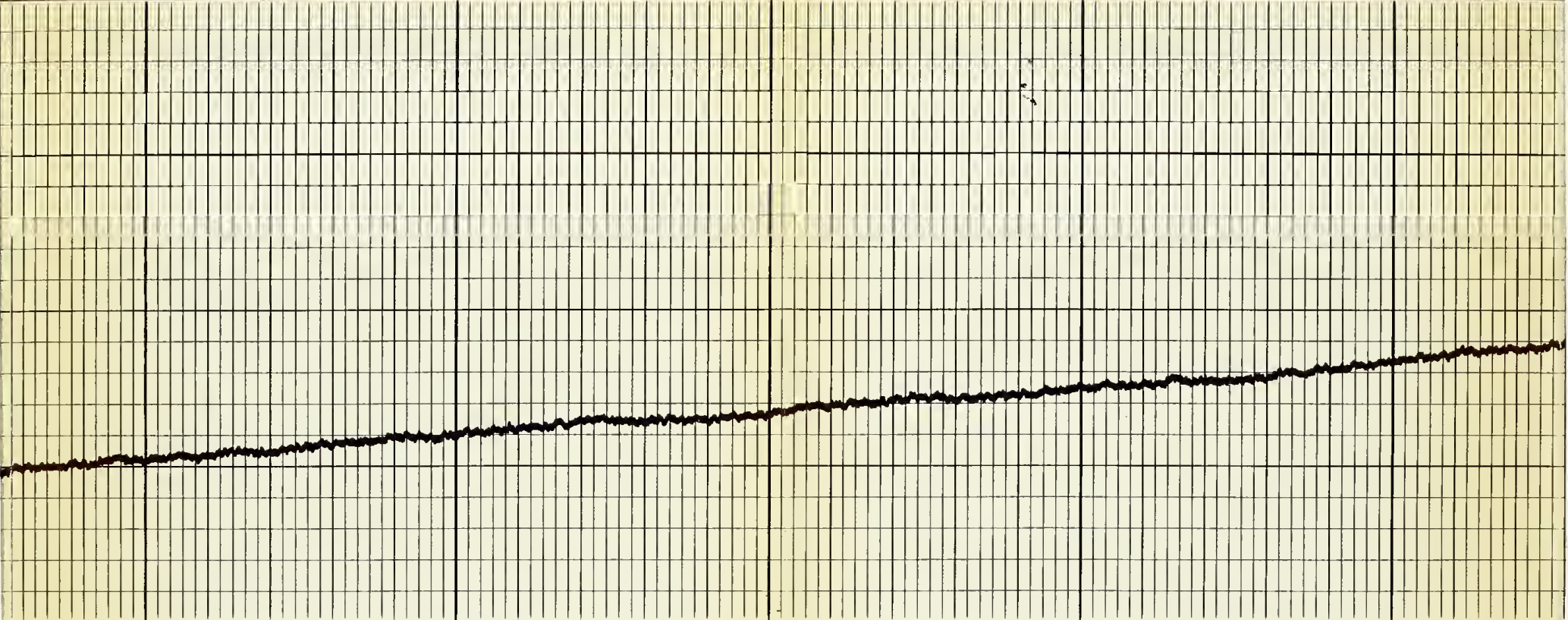




1200

1300





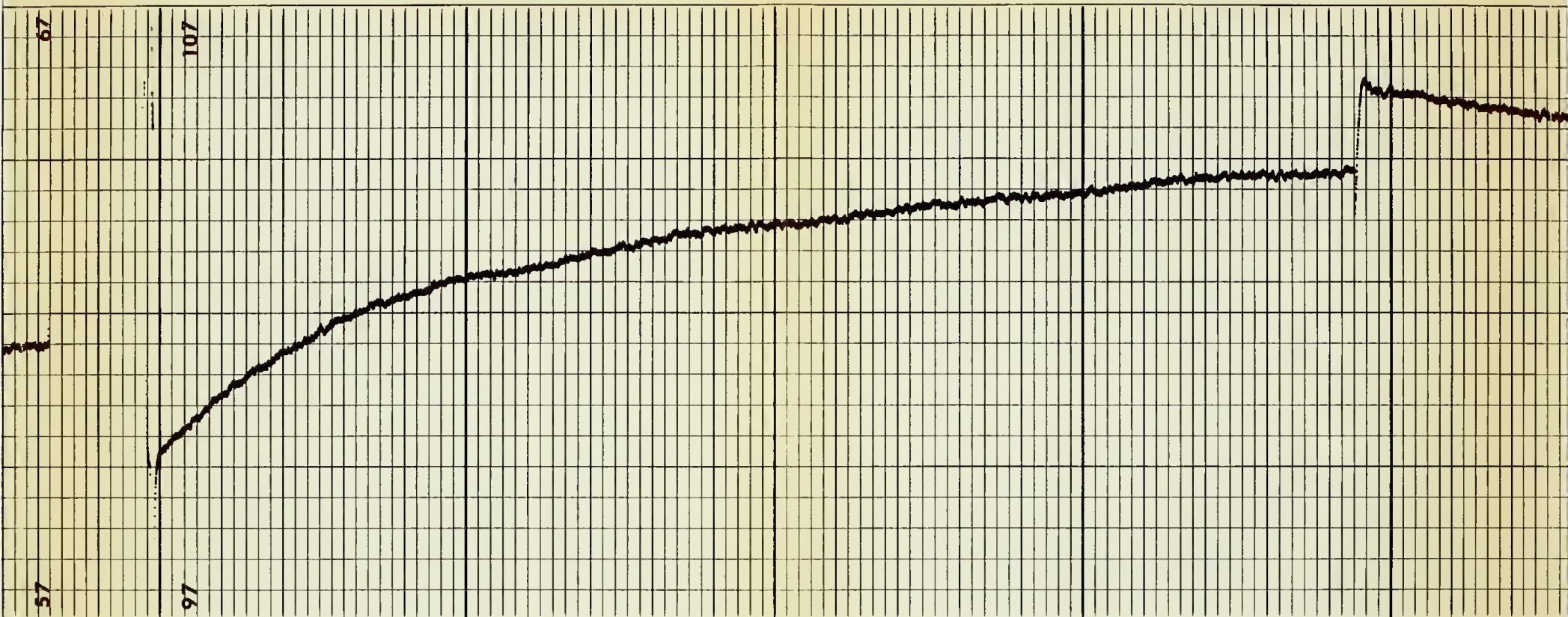
1400

1500

1600



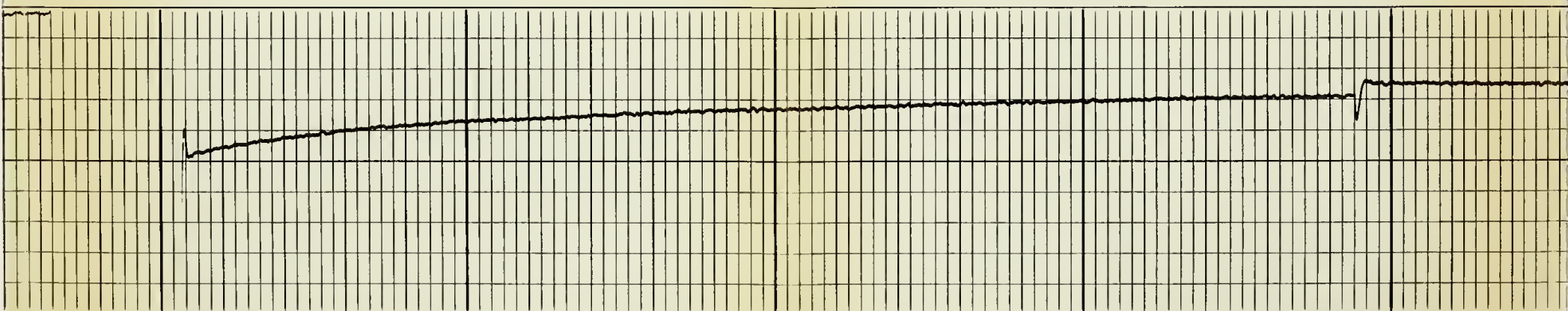


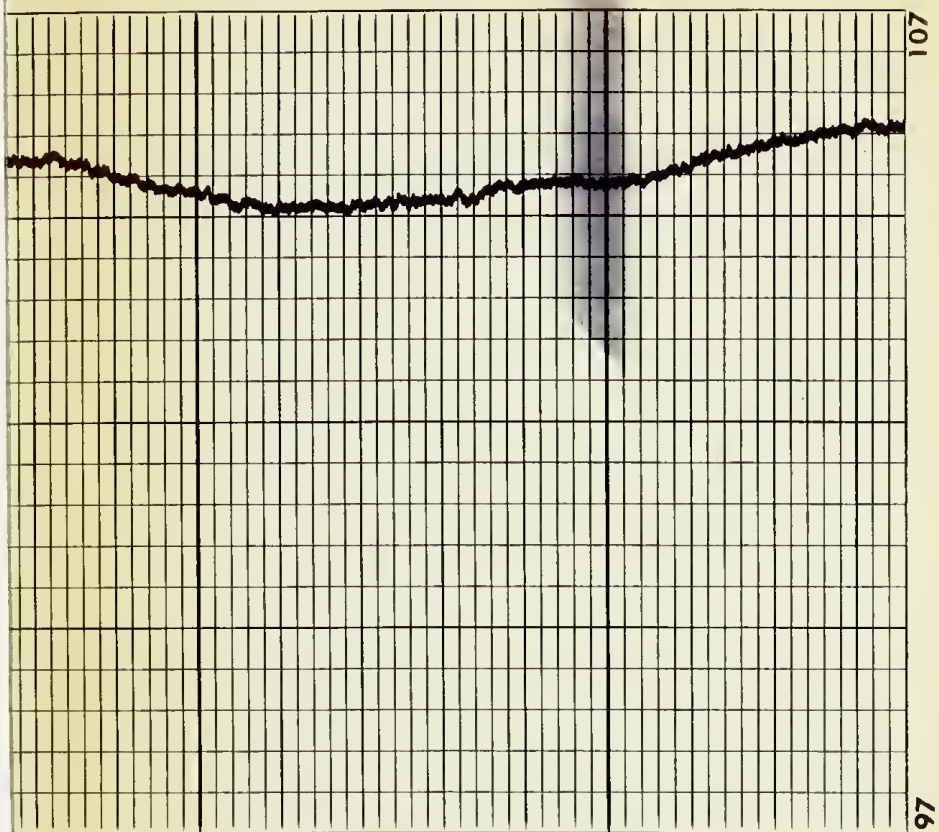


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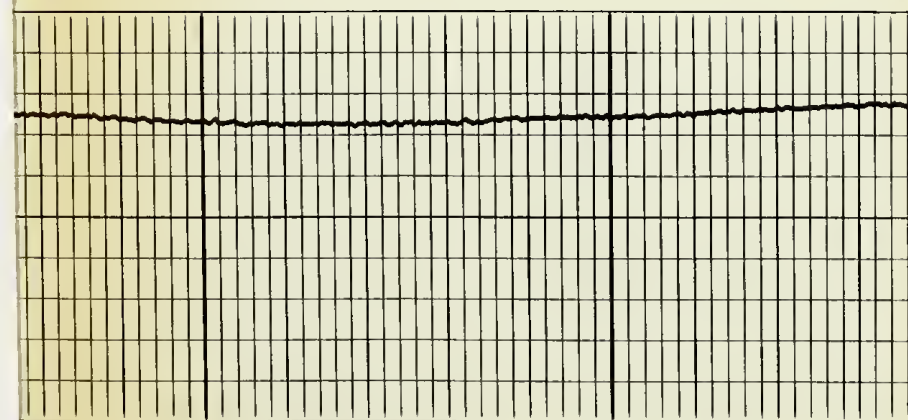
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1900

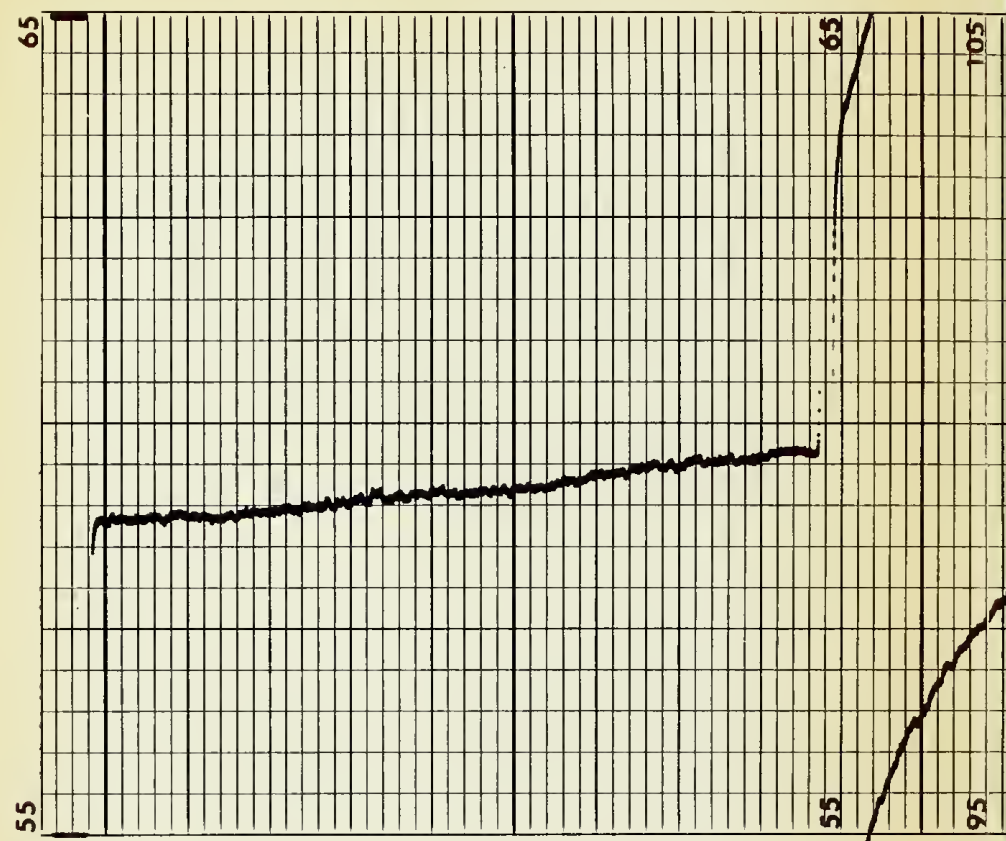




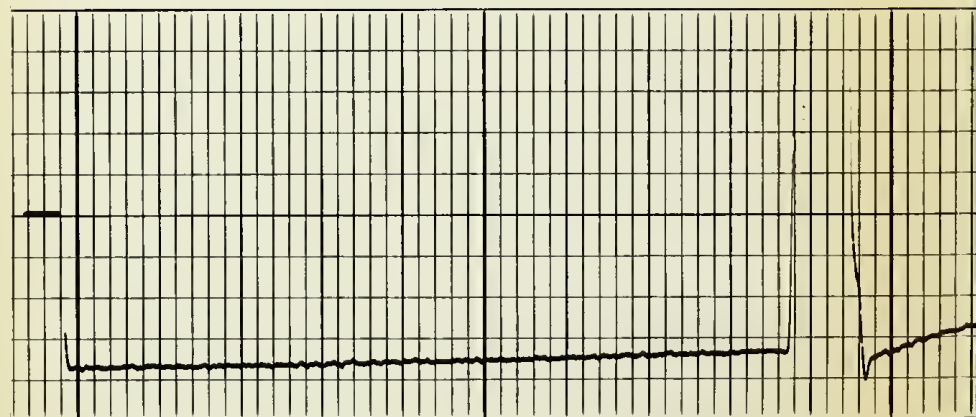
2000



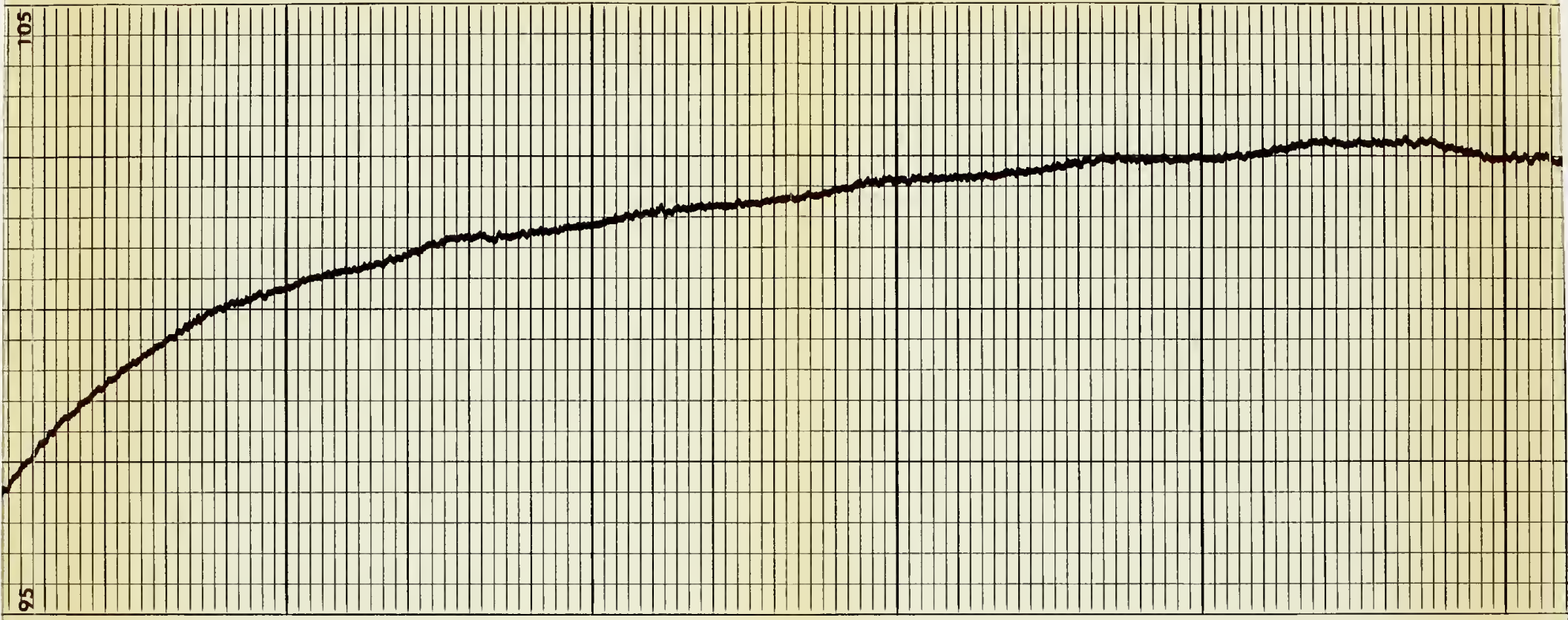
SCALE CHANGE



1600



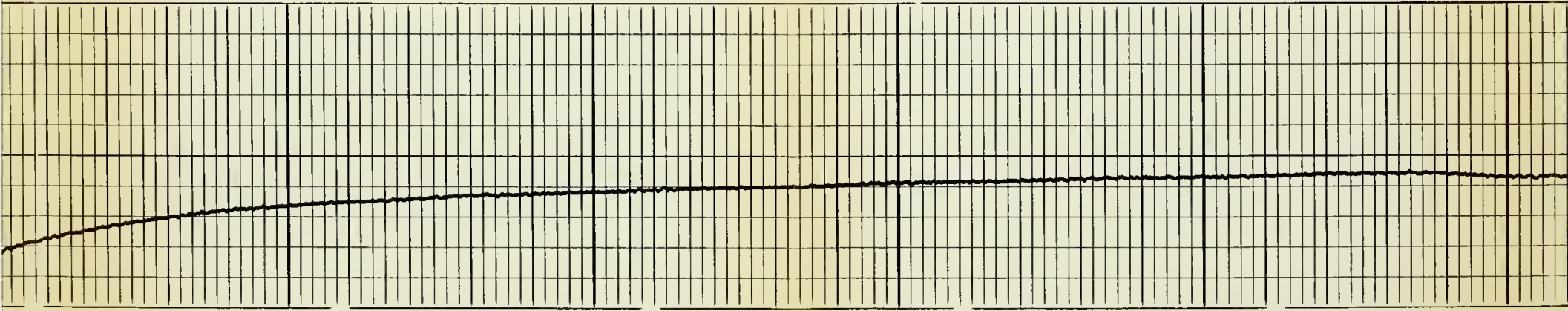


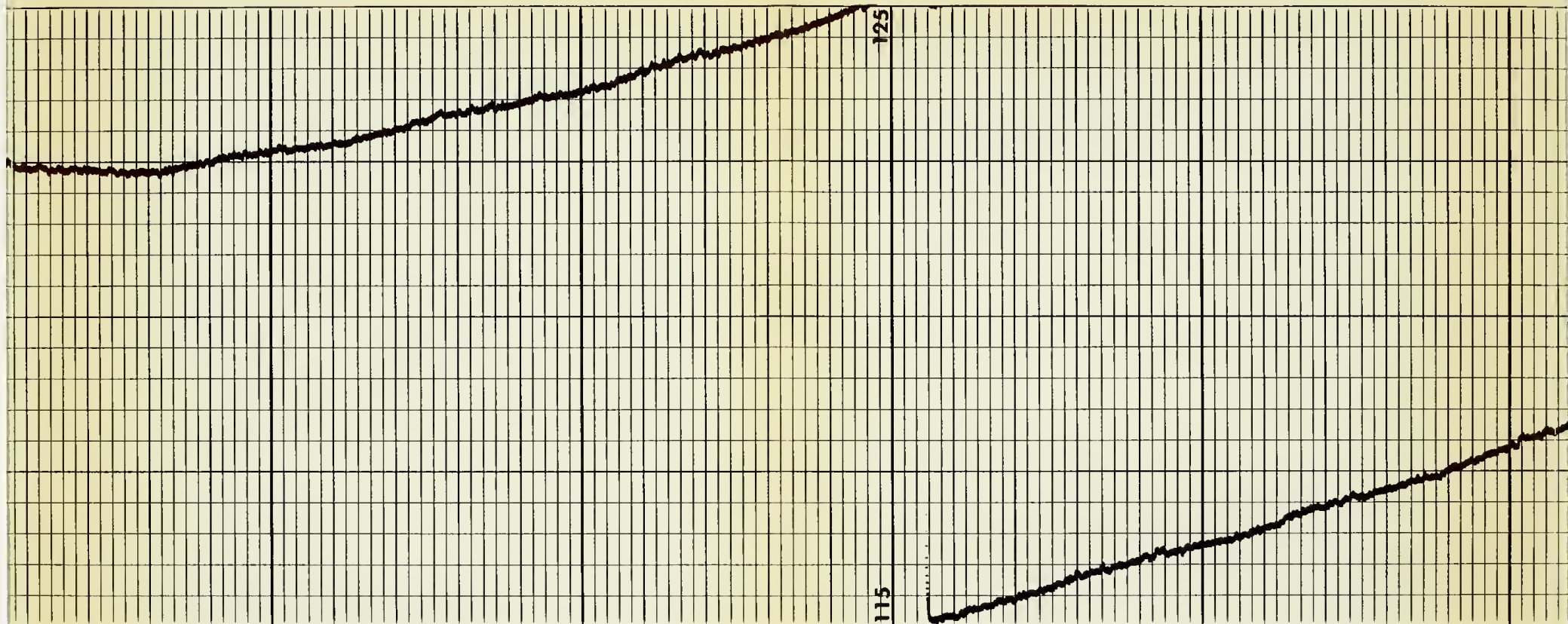


1700

1800

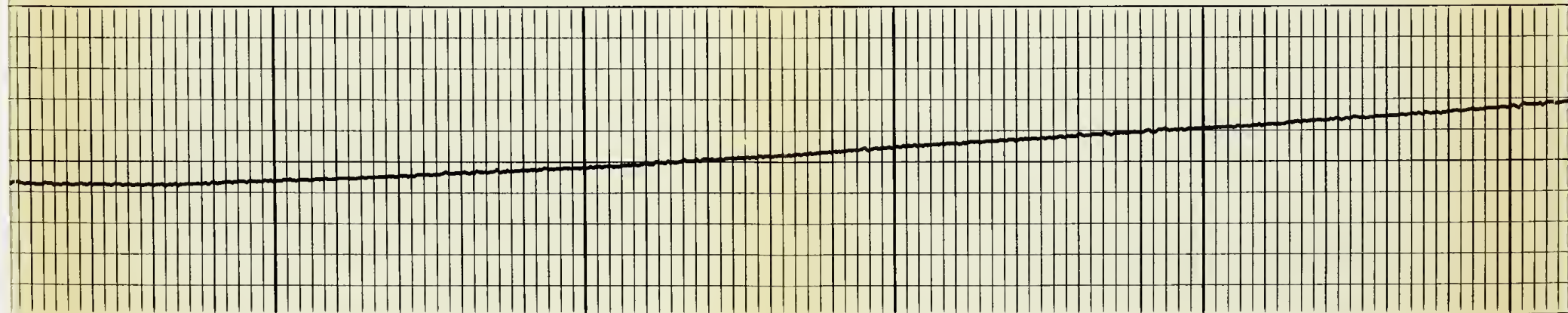
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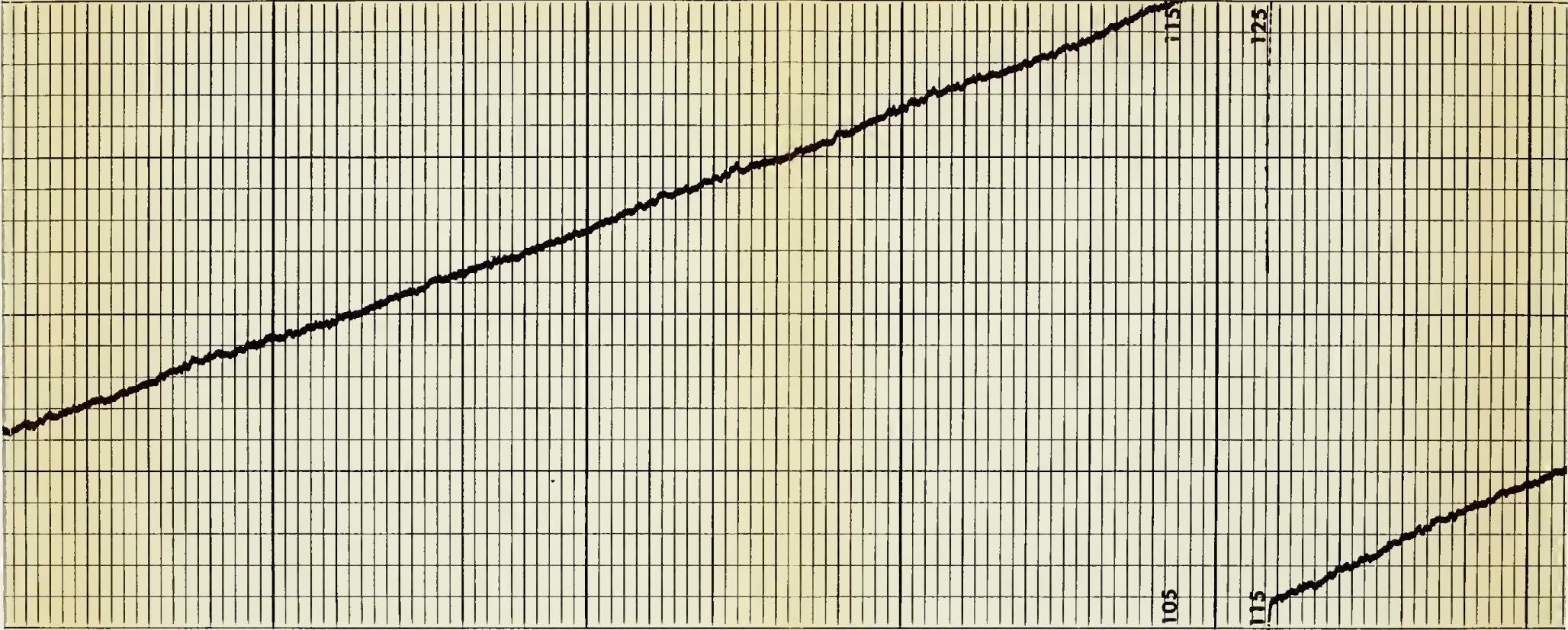


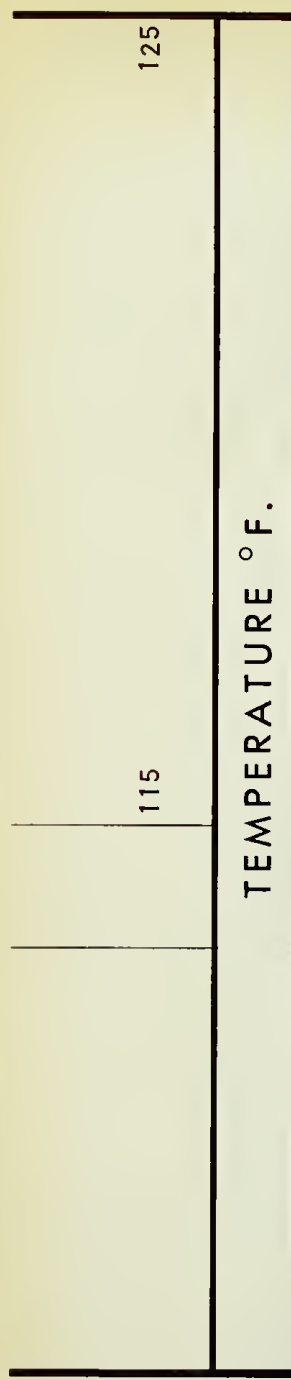
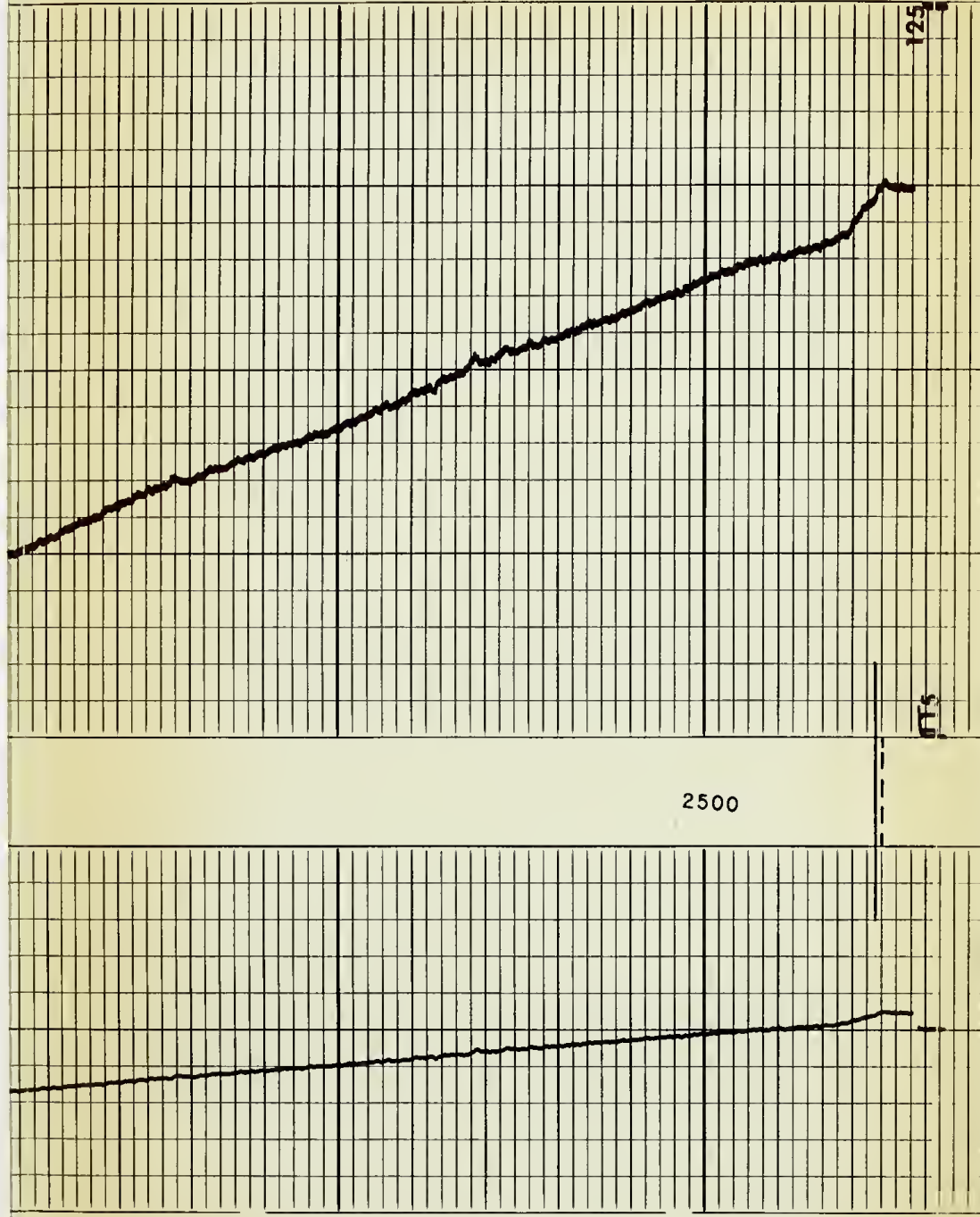
2000

2100









COMPANY	ATLANTIC FICHFIELD COMPANY	SCHL. F. R.	2523
WELL	SORGHUM GULCH NO. 1	SCHL. T. D.	2524
FIELD	SORGHUM GULCH	DRLR. T. D.	2525
COUNTY	RIO BLANCO	STATE	COLORADO



COREHOLE SG-1a

THIS ENVELOPE CONTAINS THE FOLLOWING  
GEOPHYSICAL LOGS:

1. Schlumberger Formation Density

II B-2207

# COMPENSATED FORMATION DENSITY LOG

Gamma-Gamma

COUNTY	RIO BLANCO
FIELD or	
LOCATION	SORGHUM GULCH
LOCATION	SORGHUM GULCH 1-A
WELL	
COMPANY	ATLANTIC RICHFIELD

COMPANY ATLANTIC RICHFIELD COMPANY

WELL                      SORGHUM    GULCH 1-A

FIELD                      SORGHUM GULCH

COUNTY RIO BLANCO STATE COLORADO

Location: API Serial No. \_\_\_\_\_

Sec. 2 Twp. 3S Rge. 97W

Other Services:  
NONE

Permanent Datum: GL ; Elev.: \_\_\_\_\_  
Log Measured From GL , \_\_\_\_\_ Ft. Above Perm. Datum  
Drilling Measured From GL

Elev.: K.B. \_\_\_\_\_  
D.F. \_\_\_\_\_  
G.L. \_\_\_\_\_

Date	1/20/75								
Run No.	ONE								
Depth—Driller	938								
Depth—Logger	938								
Btm. Log Interval	937								
Top Log Interval	80								
Casing—Driller	7" @ 225		@		@		@		@
Casing—Logger	230								
Bit Size	6-1/4								
Type Fluid in Hole	WATER								
Fluid Level	150'								
Dens.	Visc.								
pH	Fluid Las		ml		ml		ml		ml
Source of Sample	PIT								
R <sub>m</sub> @ Meas. Temp.	7.6 @ 61 °F		@ °F		@ °F		@ °F		@ °F
R <sub>mf</sub> @ Meas. Temp.	@ °F		@ °F		@ °F		@ °F		@ °F
R <sub>mc</sub> @ Meos. Temp.	@ °F		@ °F		@ °F		@ °F		@ °F
Source: R <sub>mf</sub>	R <sub>mc</sub>								
R <sub>m</sub> @ BHT	@ °F		@ F		@ F		@ F		@ F
Time Since Circ.									
Max. Rec. Temp.	6 °F		°F		°F		°F		°F
Equip.   Location	5602   G. J.								
Recorded By	GEIGER								
Witnessed By	BURNS								

FOLD HERE

The well name, location and borehole reference data were furnished by the customer.

## CHANGES IN MUD TYPE OR ADDITIONAL SAMPLES

Date	Sample No.	Depth - Driller	Type Fluid	Source of Sample	R <sub>m</sub> $\bar{\alpha}$ Meas. Temp.	R <sub>mf</sub> $\bar{\alpha}$ Meas. Temp.	R <sub>mc</sub> $\bar{\alpha}$ Meas. Temp.	R <sub>m</sub> $\bar{\alpha}$ BHT	Dens.	Visc.	ph	Fluid Loss	% Water by Vol.	% Oil by Vol.	% Solids by Vol.	Solids Av. Sp Gr
					@	@	@	@				ml				

## EQUIPMENT DATA

Run No.	Panel No.	Source	Run No.	Panel No.	Source
169	Panel No.	Source	169	Panel No.	Source
299	Cort No.	Colibrot	299	Cort No.	Colibrot
436	Skid No.	GR Cort.	436	Skid No.	GR Cort.
90	Sonde No.	TTR	90	Sonde No.	TTR
3098	Source	Mem Panel	3098	Source	Mem Panel
210	Colibrot		210	Colibrot	
209	GR Cort.		209	GR Cort.	
235	Mem Panel		235	Mem Panel	

## SCALE CHANGES

[illegible]

## LOGGING DATA

[illegible]

REMARKS

REMARKS	Service Order No.	
	-	22497

ELEVATION AND EXACT LOCATION WERE  
NOT AVAILABLE AT TIME OF LOGGING.

## BIT SIZE/CASING DATA

BIT SIZE / CASING DATA							
Bit	From		To	Csg. Size	Csg. Wt.	From	To
	6-	150	938				7"
1/4							

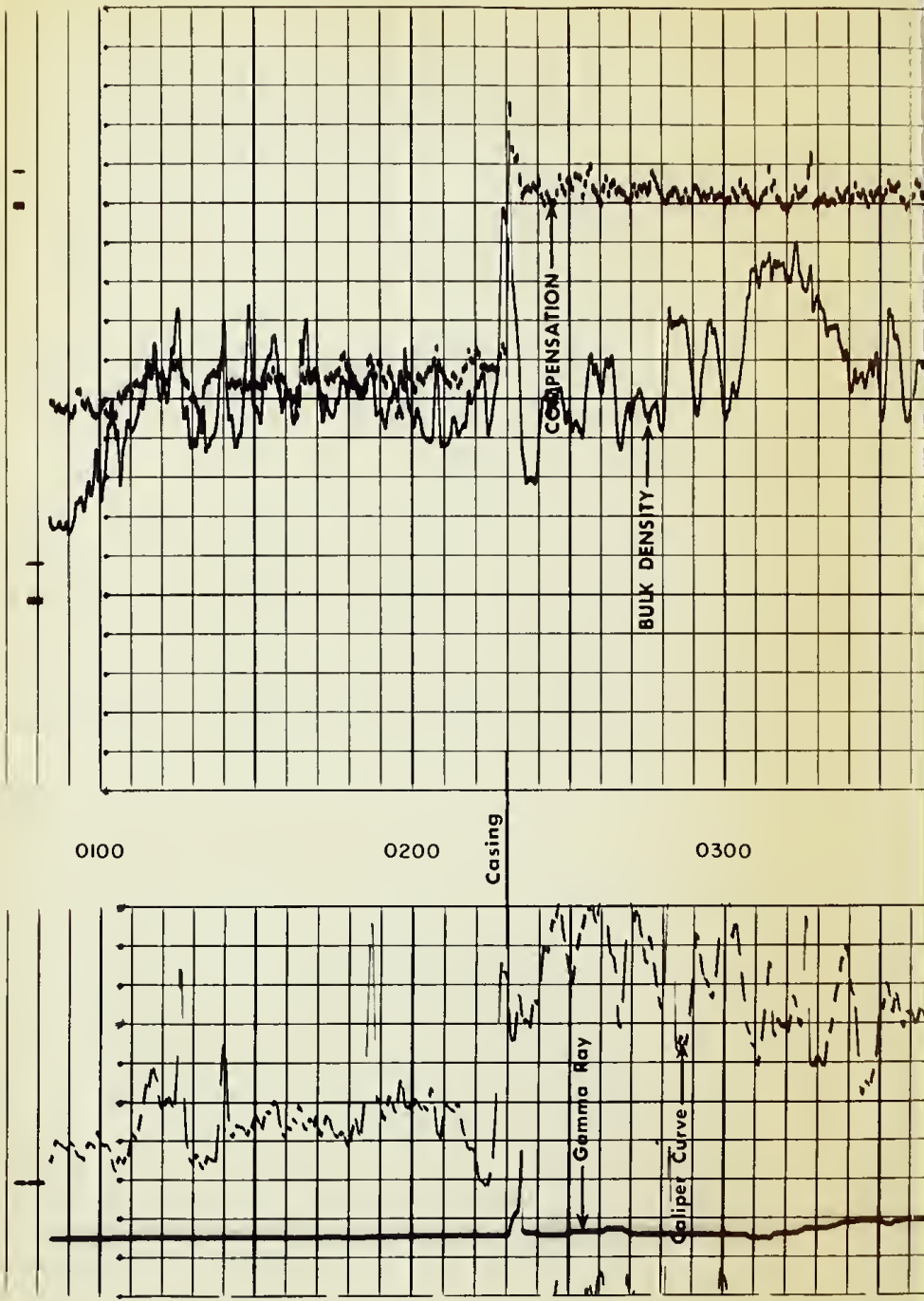


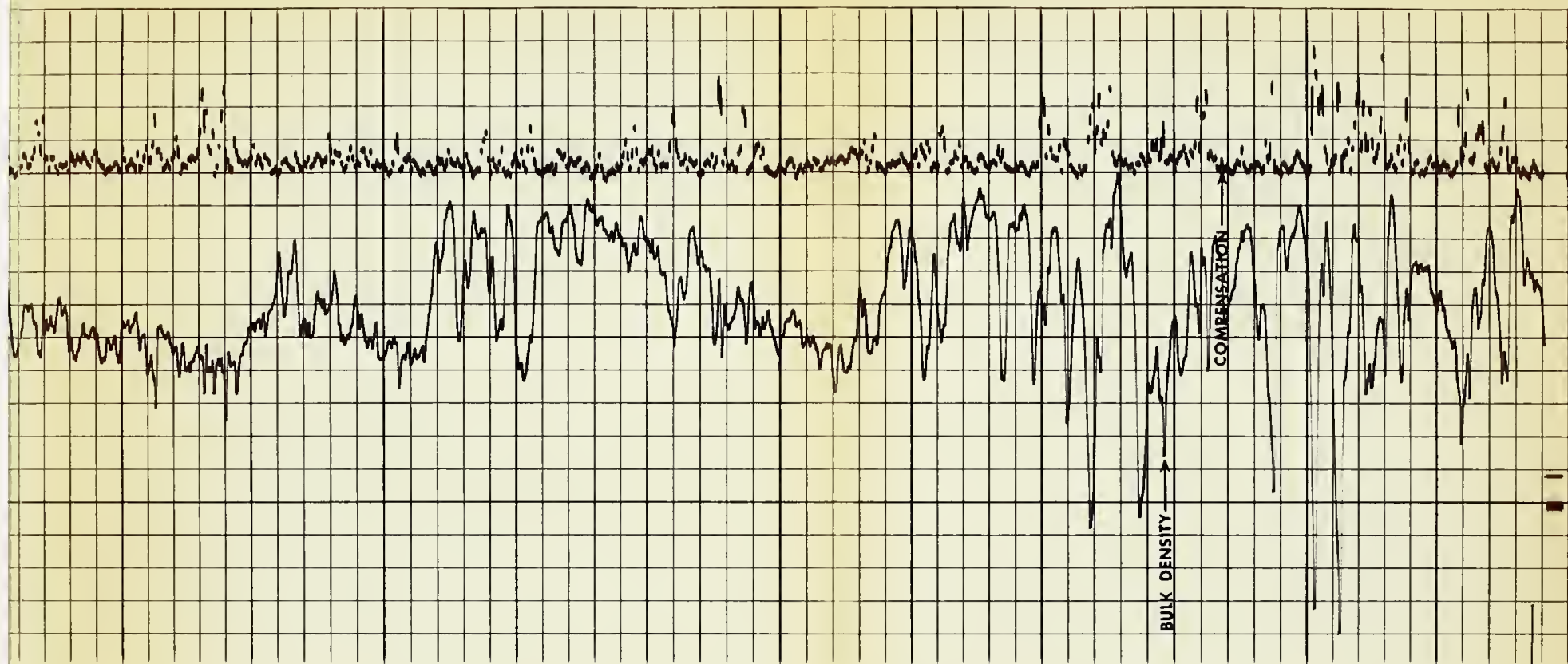
# CALIBRATION DATA

Run No.	Gamma Ray		FDC — Before Log — ACPS		FDC — After Log — ACPS	
	API Scale	Background CPS	Total CPS	P <sub>1</sub>	P <sub>2</sub>	P <sub>2</sub>
1	0-200	150	610	550	545	930
2						
3						
4						
				BLOCK CAL	560	940

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to Clause 7 of our General Terms and Conditions as set out in our current Price Schedule.

CALIPER		DEPTHS	
HOLE DIAM. IN INCHES			
		5	15
		CORRECTION GRAMS/CC.	
		-0.25 0 +0.25	
		BULK DENSITY GRAMS CC.	
0	150	1.7	2.2
150	300	.7	1.2
			2.7
			1.7





0400

0500

0600

0700

0800

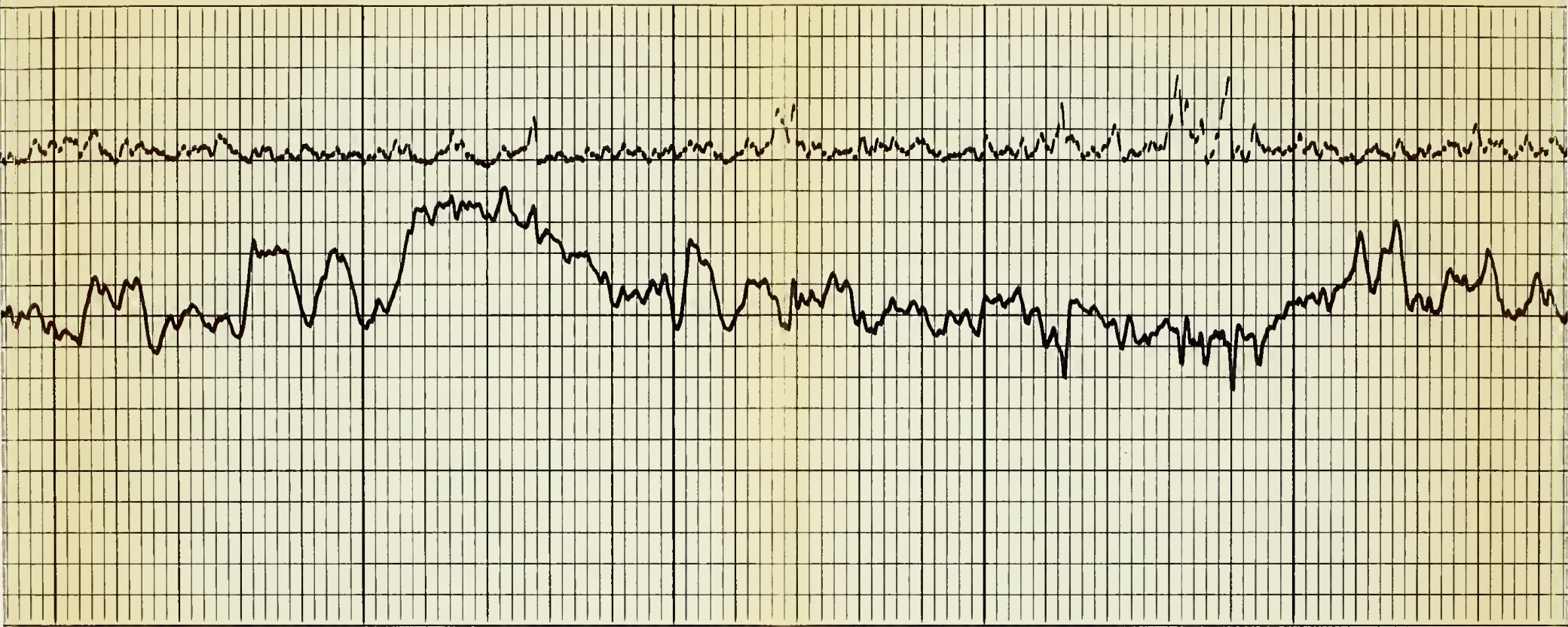
0900



5" DETAIL LOG







0300

0400



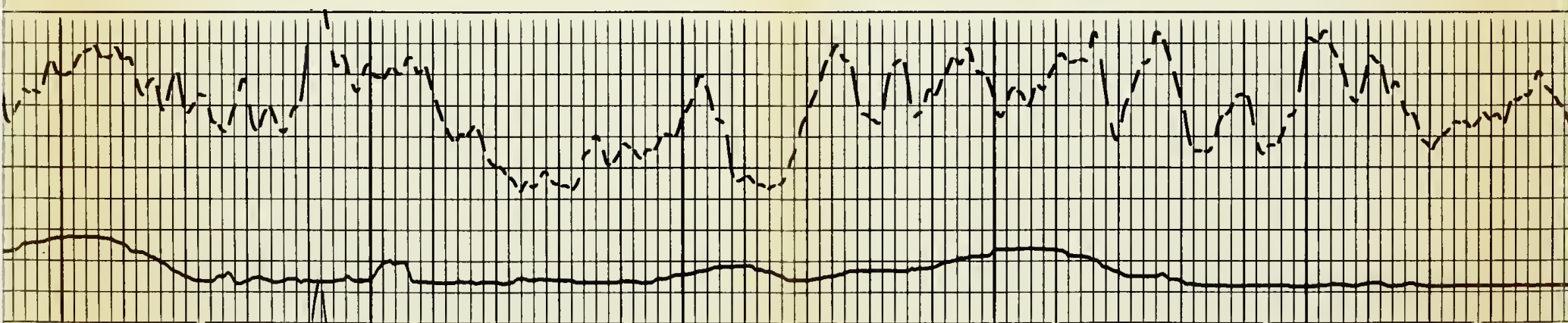


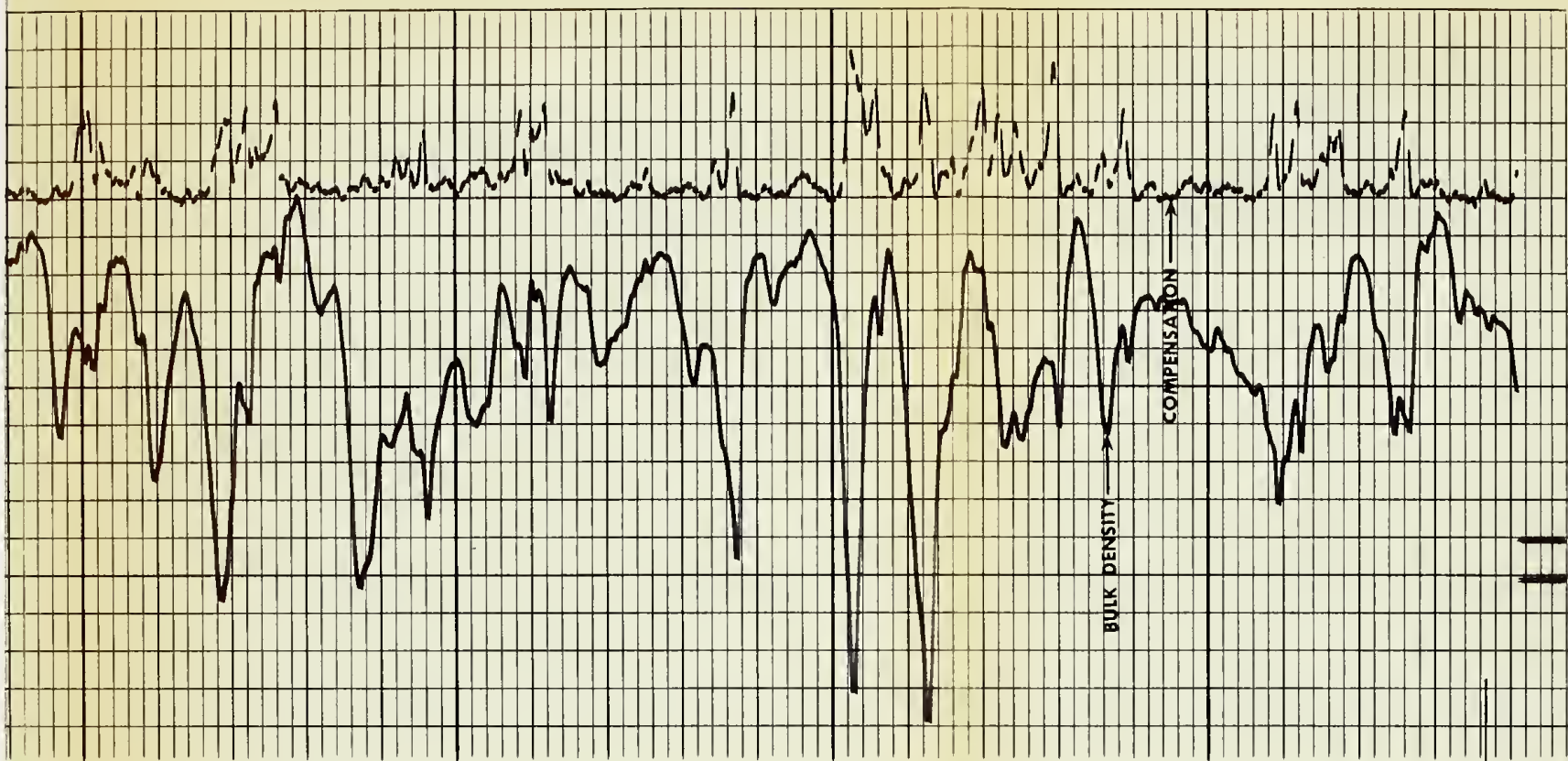


0500

0600

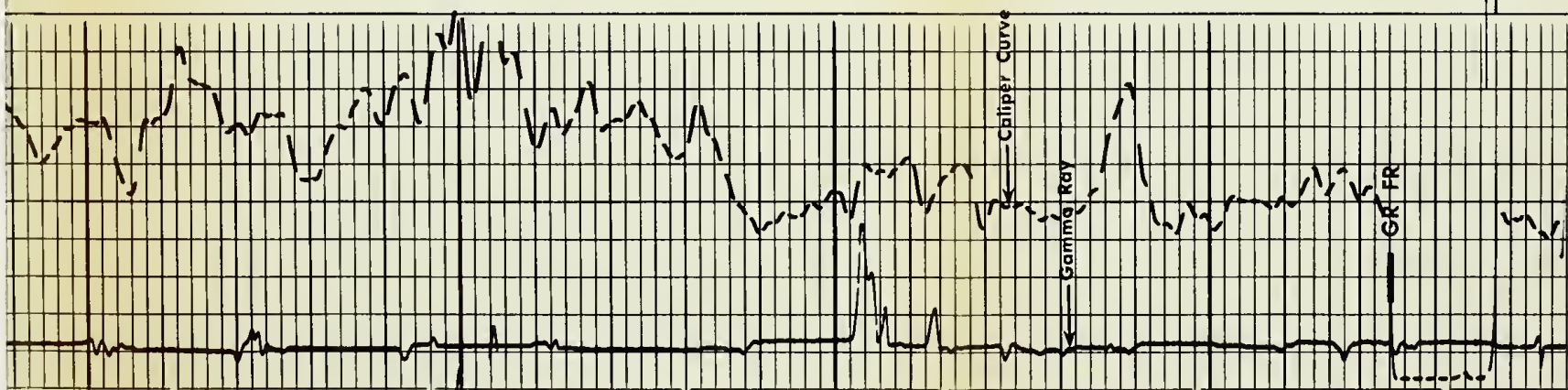
0700





0800

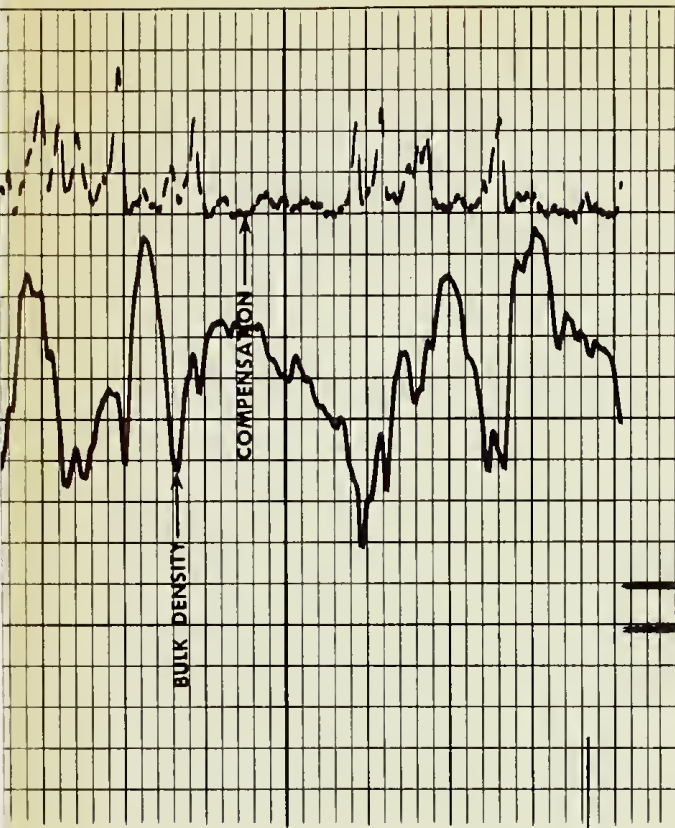
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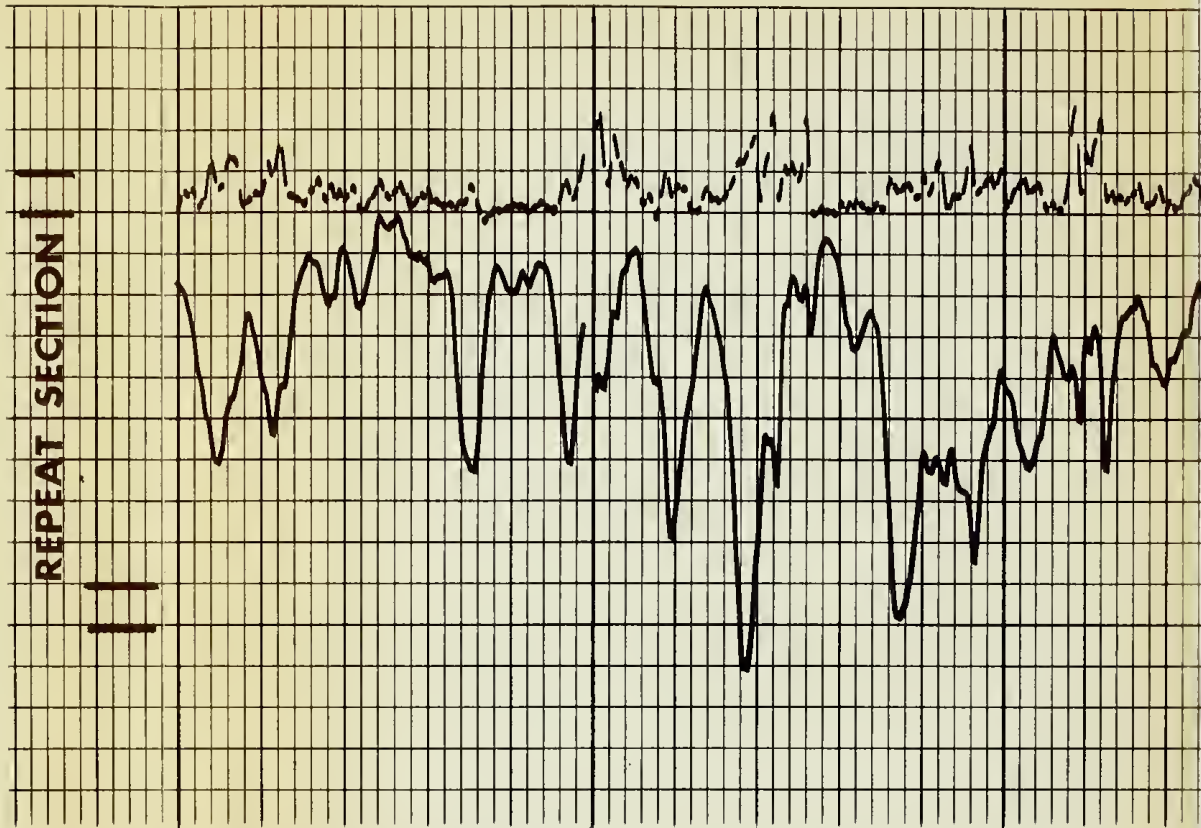
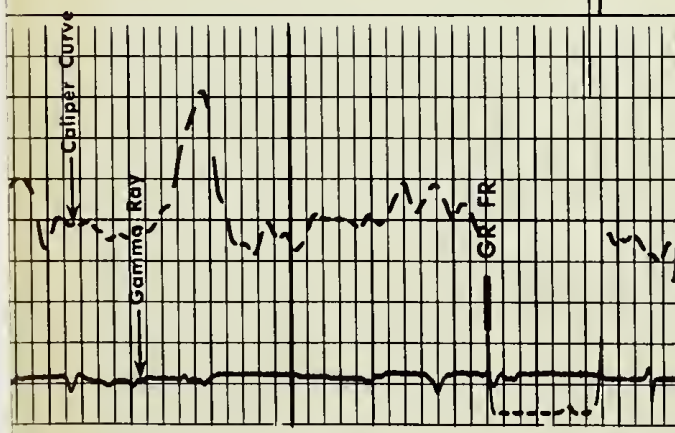
REPEAT SECTION

ALID





0900

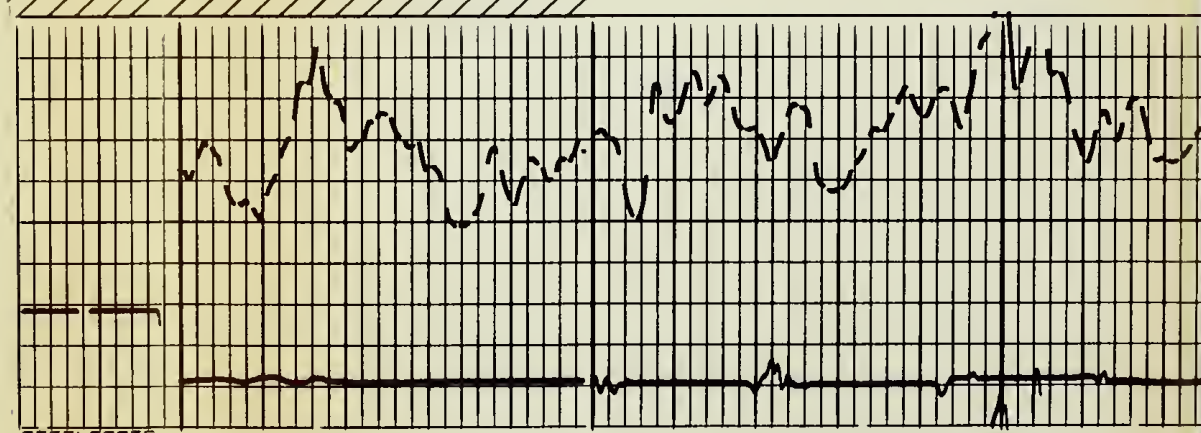


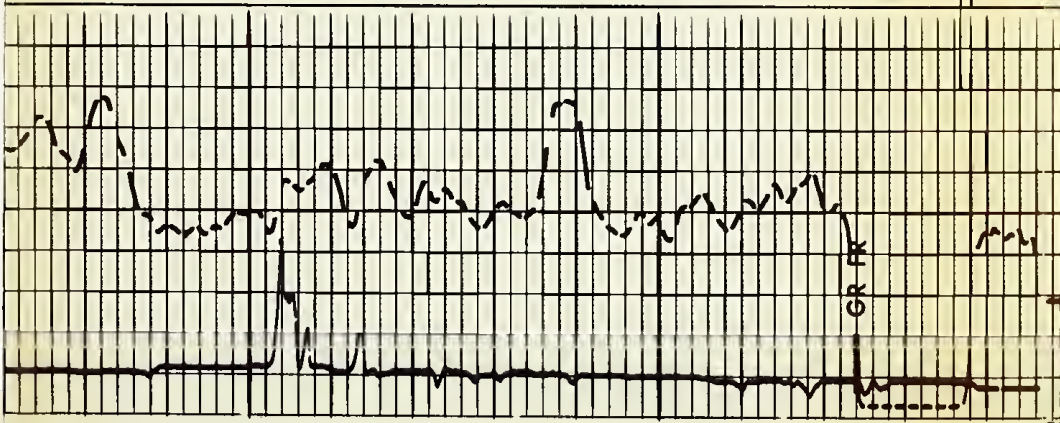
ALID

0700

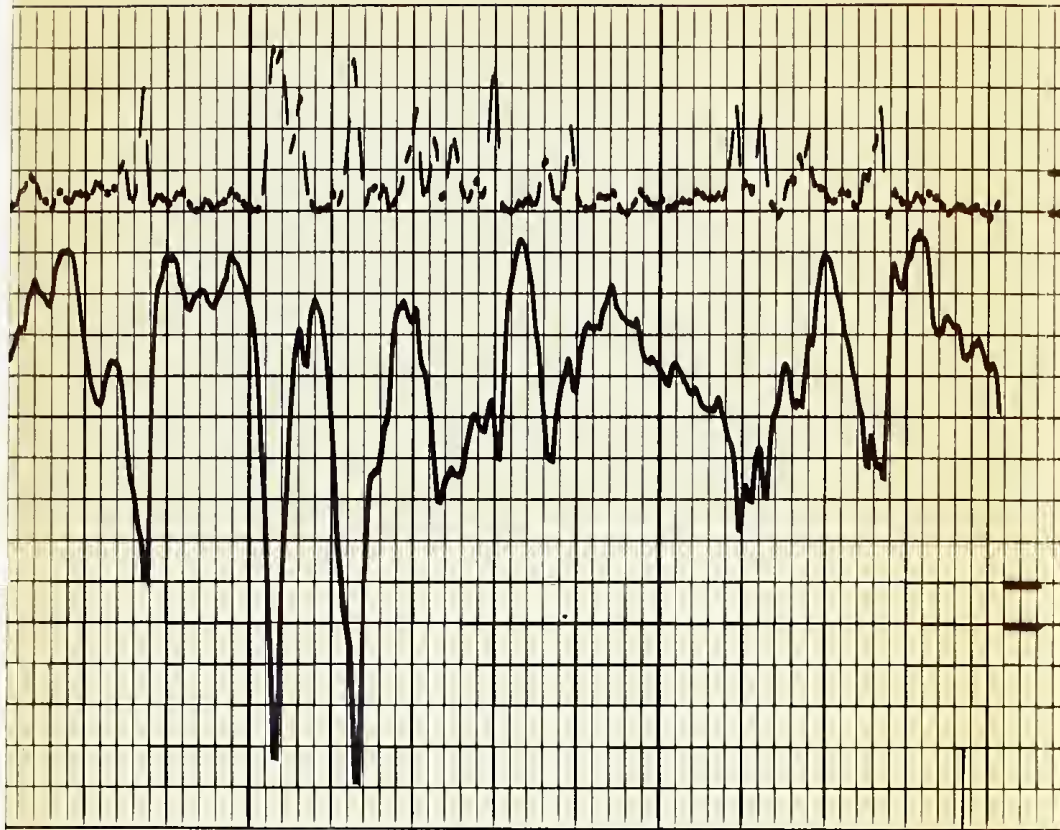
MEMORIZER O

0800





0900



0 150 300		150 2.2 2.7	
GAMMA RAY API UNITS		BULK DENSITY GRAMS CC.	
5 15		-0.25 0 +0.25	
CALIPER HOLE DIAM. IN INCHES		CORRECTION GRAMS CC.	
DEPTHS			
COMPANY ATLANTIC RICHFIELD CO.			
WELL SORGHUM GULCH 1-A			
FIELD SORGHUM GULCH			
COUNTY RIO BLANCO STATE COLORADO			
SCHL. FR 937			
SCHL. TD 938			
DRLR TD 938			
Elev: KB -----			
DF -----			
GL -----			
CALIBRATION RECORD			
CALIBRATION AFTER SURVEY			



13

12

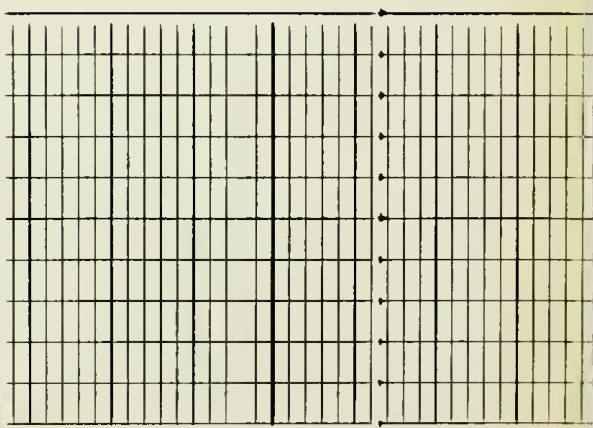
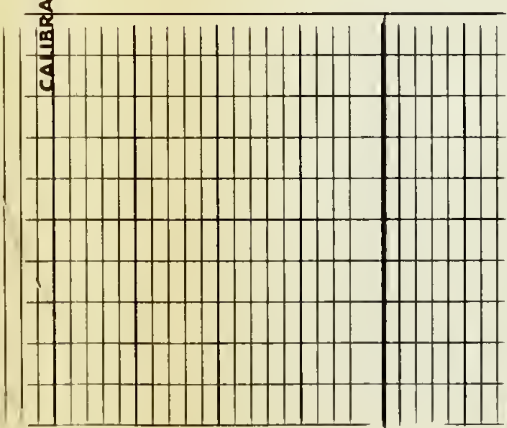
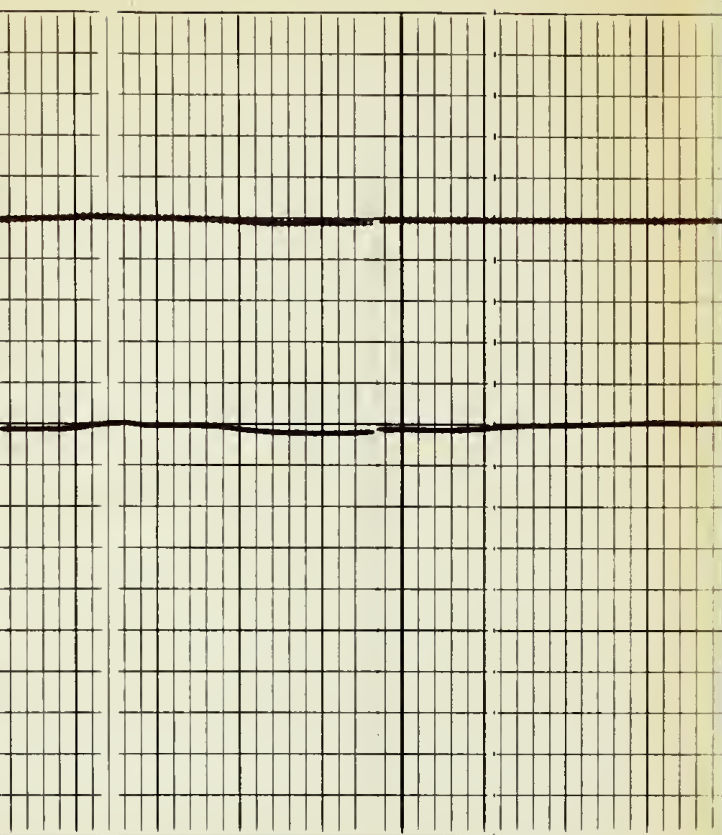
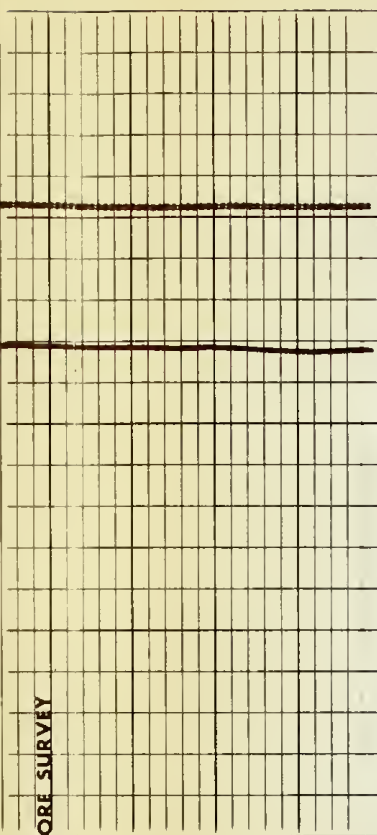
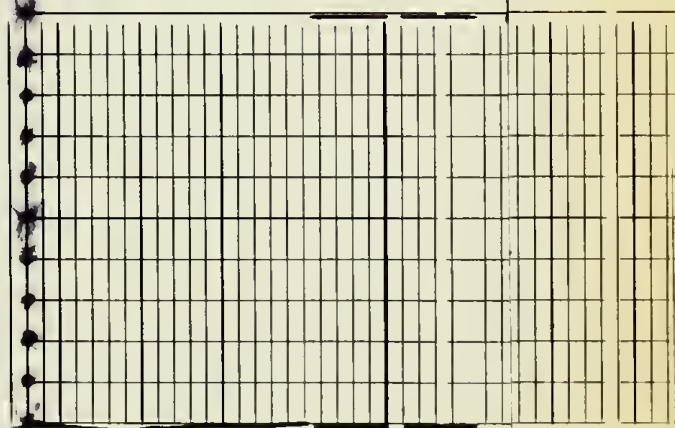
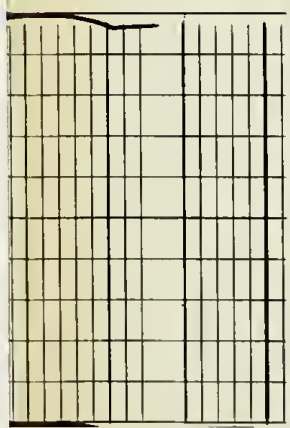
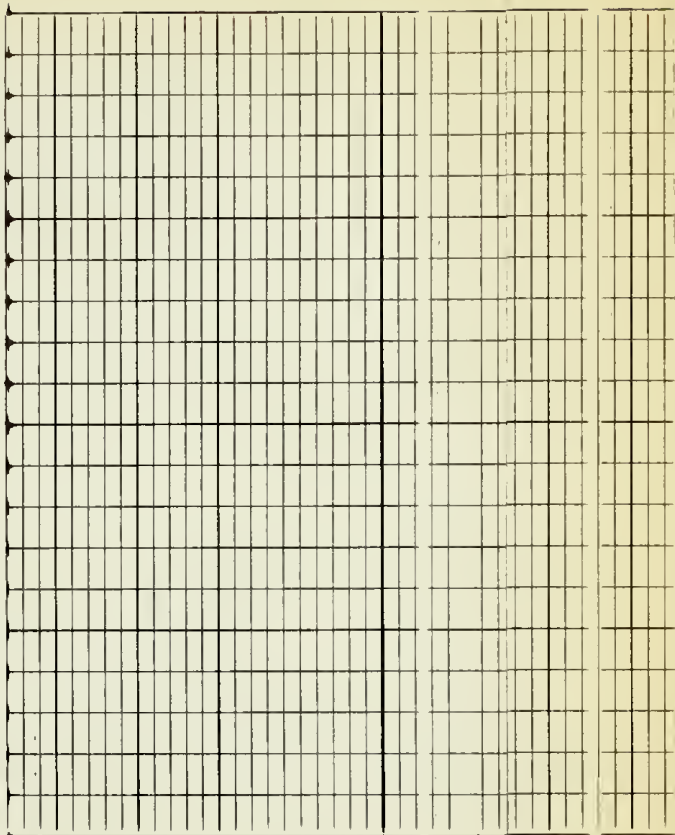
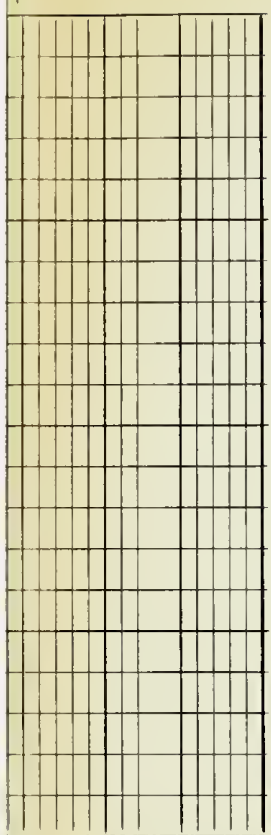
11

2

1

6

G. R. SURFACE CALIBRATION



CALIBRATION BEFORE SURVEY

5

4

3

2

1

13

12

11



# Caliper Calibration

3  
2  
1

# PANEL FUNCTION FORMER CHECKS

7  
6  
5  
4  
3  
2  
1

# SHOP CAL

PDH-D 688  
SFT 106 210  
CS 3098  
POR-ca. 161  
P-13244P-205X4  
5 JAN. 1975

13



PDH-2 688  
SFT 106 210  
CS 3090  
POP-CA 161  
P-1324P-2654  
5 JAN. 1975

SHOP CAL.

13

12

11

21

FORMATION DENSITY COMPENSATED CALIBRATION CODING

1. MECHANICAL ZERO
2. RECORDER SENSITIVITY

PANEL TEST

FDC LIQUID

POS	$\rho$	$\Delta\rho$
3. # 1	2.92	.00
4. # 2	2.78	+.14
5. # 3	2.42	-.10
6. # 4	2.35	.00
7. # 5	2.08	.01
8. MECHANICAL ZERO CALIPER		
9. 8" RING		
10. 12" RING		
11. TOOL CALIBRATE # 1 SET $\rho = 2.50$		
12. TOOL CALIBRATE # 2 SET $\Delta\rho = .00$		
13. LOG POSITION $\rho = 2.59$ , $\Delta\rho = .015$		

GAMMA RAY CALIBRATION CODING

1. MECHANICAL ZERO
2. ELECTRICAL ZERO
3. RECORDER SENSITIVITY
4. MEMORIZER ADJUSTMENT
5. BACKGROUND
6. CALIBRATE - SOURCE IN PLACE



CALIBRATION RECORD

COMPANY ATLANTIC RICHFIELD

WELL SORGHUM GULCH 1-A

FIELD SORGHUM GULCH

COUNTY RIO BLANCO STATE COLORADO

SCHL. FR 937  
SCHL. TD 938  
DRLR TD 938  
Elev: KB ---  
DF ---  
GL ---



COREHOLE SG-8

THIS ENVELOPE CONTAINS THE FOLLOWING  
GEOPHYSICAL LOGS:

1. Schlumberger Sonic
2. Schlumberger Borehole Compensated  
Sonic
3. Schlumberger Laterolog

II B-2 208

AMPLITUDE - VARIABLE DENSITY

## SONIC LOG - GAMMA RAY

COUNTY RIO BLANCO  
FIELD or  
LOCATION SORGHUM GULCH  
WELL SORGHUM GULCH #8  
COMPANY ATLANTIC RICHFIELD

COMPANY ATLANTIC RICHFIELD COMPANY

WELL \_\_\_\_\_ SCRGHUM GULCH #8

FIELD \_\_\_\_\_ SORGHUM GULCH \_\_\_\_\_

COUNTY RIC BLANCO STATE COLORADO

Location: API Serial No. \_\_\_\_\_  
2600' FWL & 2301' FSL

Sec. 9 Twp. 35S Rge. 96W

**Other Services:**

HRT  
FDC-GR  
BHC-GR  
LL-7

Permanent Datum: GL; Elev.: 6538  
Log Measured From GL, 0 Ft. Above Perm. Datum  
Drilling Measured From GL

Elev.: K.B.       
D.F. 6542  
G.L. 6538

Date	11-28-74								
Run No.	ONE								
Depth—Driller	2608								
Depth—Logger	2606								
Btm. Log Interval	2596								
Top Log Interval	170								
Casing—Driller	8 5/8 @ 176		@		@		@		
Casing—Logger	170								
Bit Size	6-1/4								
Type Fluid in Hole	WATER								
Fluid Level	+ 100								
Dens.	Visc.								
pH	Fluid Loss		ml		ml		ml		ml
Source of Sample			MUD PIT						
R <sub>m</sub> @ Meas. Temp.	2.79 @ 68 °F		@	°F	@	°F	@	°F	@
R <sub>mf</sub> @ Meas. Temp.	CLEAR @ °F		@	°F	@	°F	@	°F	@
R <sub>mc</sub> @ Meas. Temp.	WATER @ °F		@	°F	@	°F	@	°F	@
Source: R <sub>mf</sub>   R <sub>mc</sub>	AIR DRILLED								
R <sub>m</sub> @ BHT	2.05 @ 126 °F		@	°F	@	°F	@	°F	@
Time Since Circ.			1700 11-27						
Max. Rec. Temp.			126 °F						
Equip.	Location		7674   VRNL						
Recorded By			LALTON-ETTER						
Witnessed By			BURNS-TAIT						

The well name, location and borehole reference data were furnished by the customer.

## SCALE CHANGES

## CHANGES IN MUD TYPE OR ADDITIONAL SAMPLES

Date	Sample No.		Type Log	Depth	Scale Up Hole	Scale Down Hole
Depth - Driller						
Type Fluid in Hole						
Dens.	Visc.					
ph	Fluid Loss	ml				
Source of Sample						
Rm @ Meas. Temp.	@	@	° F			
Rmf @ Meas. Temp.	@	@	° F			
Rmc @ Meas. Temp.	@	@	° F			
Source: Rmf   Rmc						
Rm @ BHT	@	@	° F			
Rmf @ BHT	@	@	° F			
Rmc @ BHT	@	@	° F			

## EQUIPMENT DATA

[illegible]

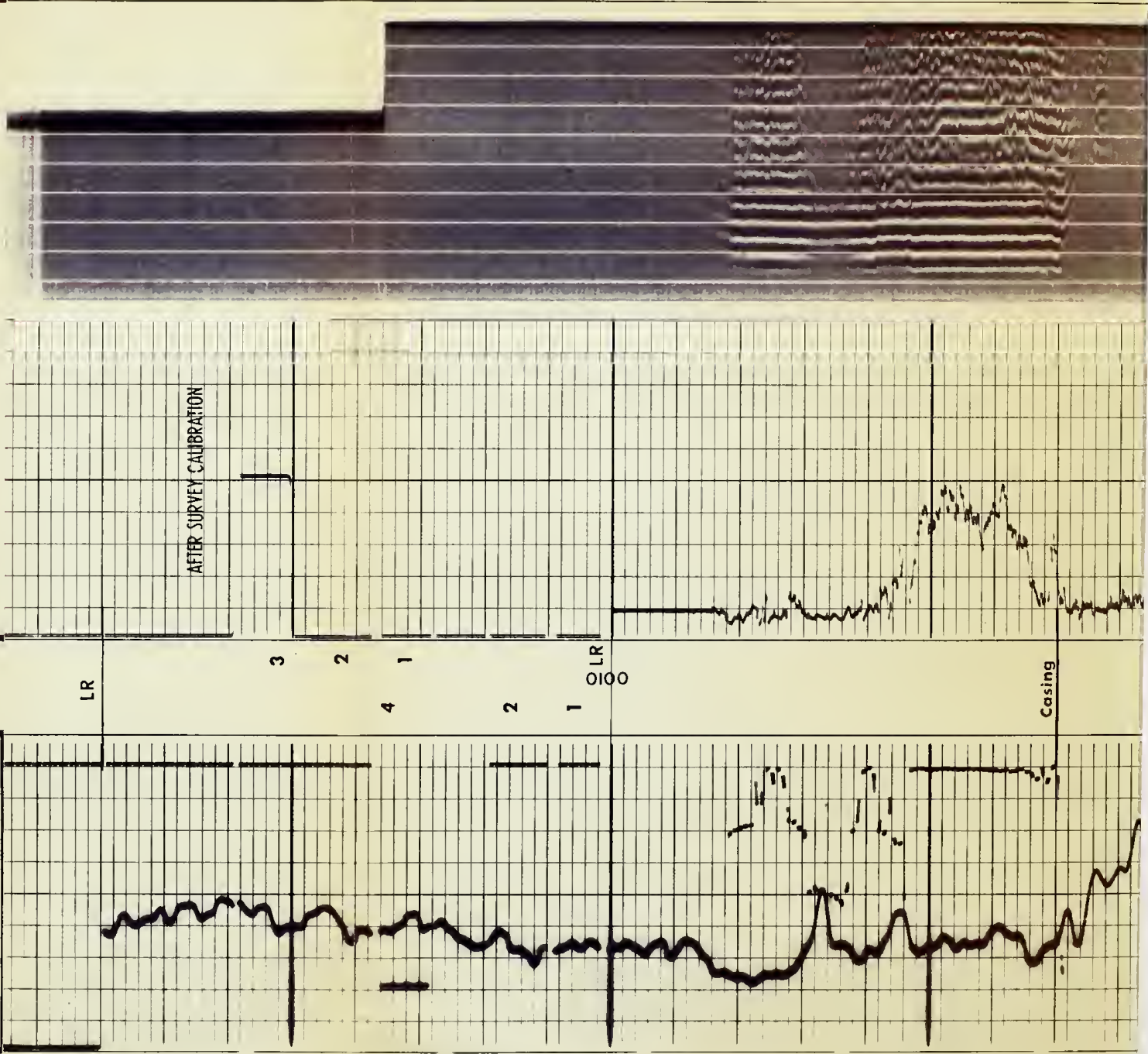
CALIBRATION DATA

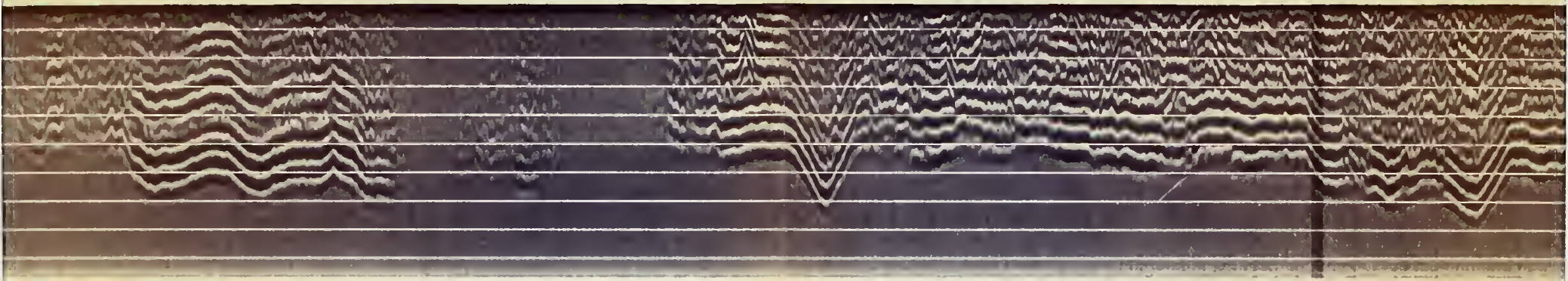


CALIBRATION DATA				
CALIBRATION:	BACKGND.	SOURCE	GALV. INCR.	SENS. TAP
	CPS.	CPS.	DIVISION	(FOR CAL.)
GAMMA RAY:	SEE BHCLUG GR RUN THIS LOG & THAT ONE			
<p>All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to Clause 7 of our General Terms and Conditions as set out in our current Price Schedule.</p>				

GAMMA RAY API UNITS	AMPLITUDE MILLIVOLTS	VARIABLE DENSITY MICROSECONDS
0 150 300	0 20 200	1200

SINGLE RECEIVER  $\Delta T$   
microseconds

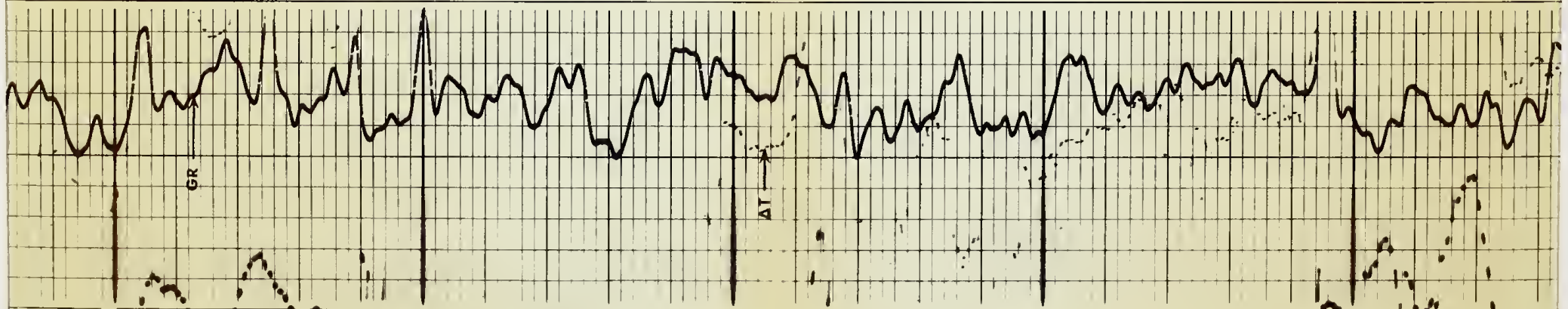




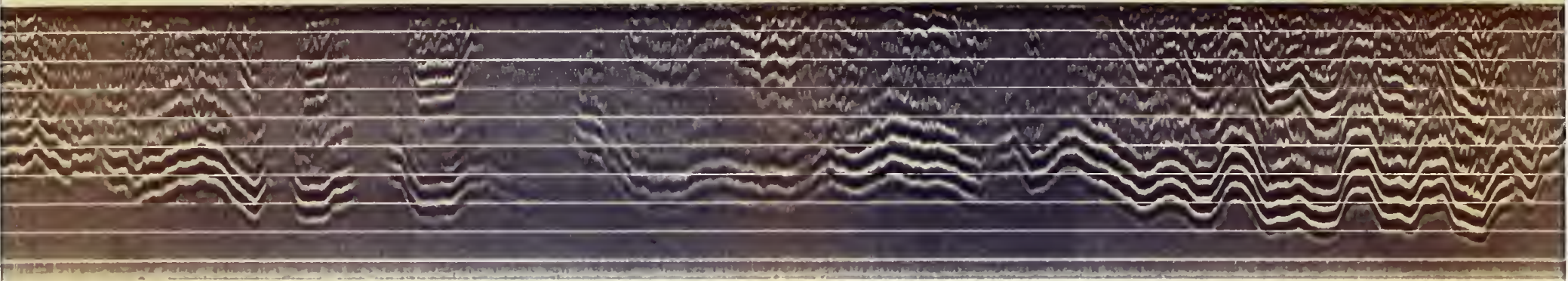
0200

0300

0400

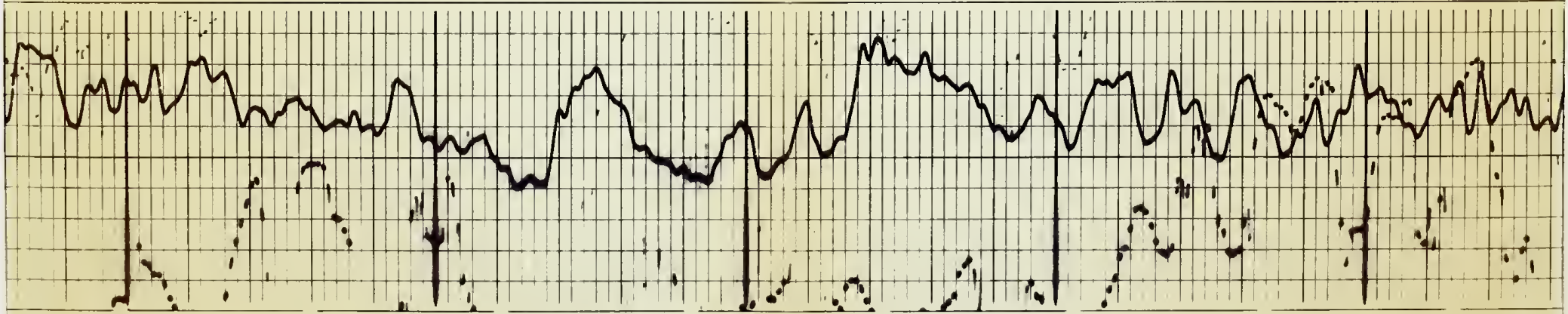




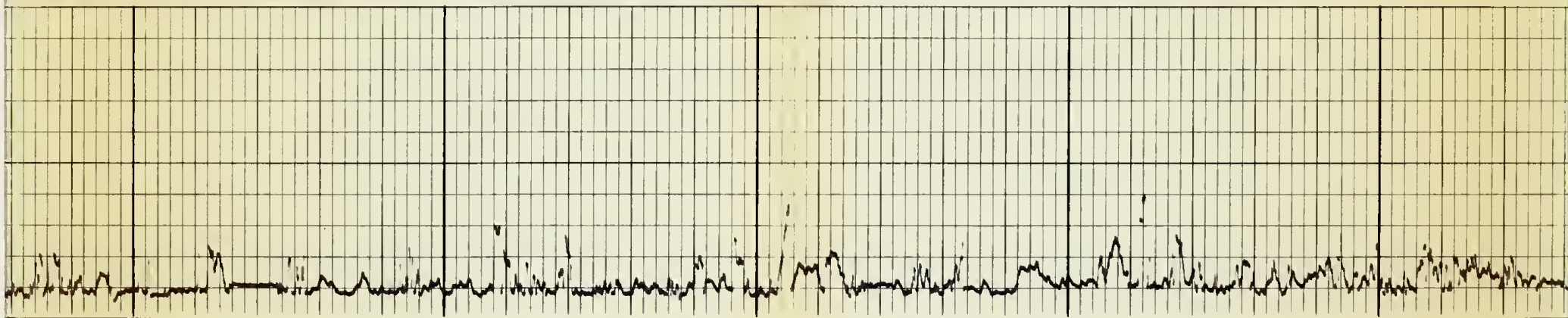
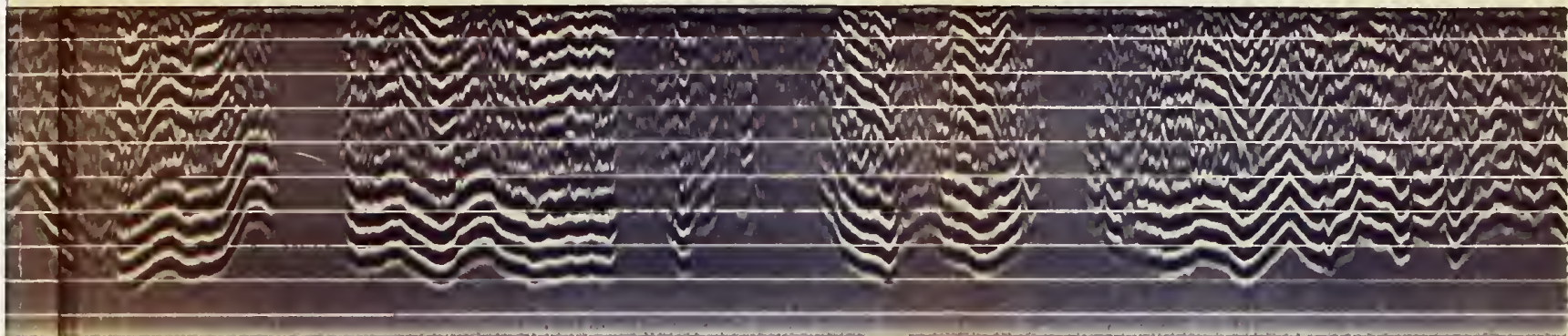


050C

060C



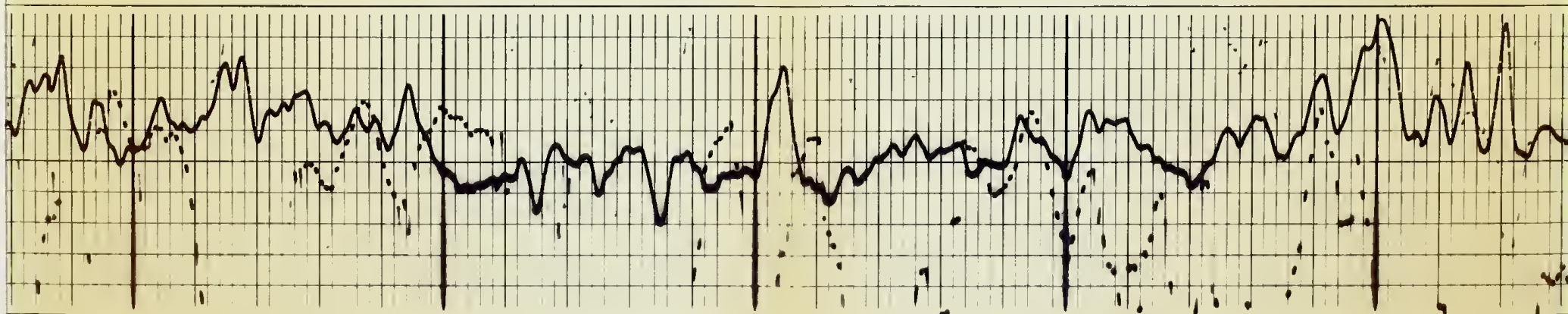




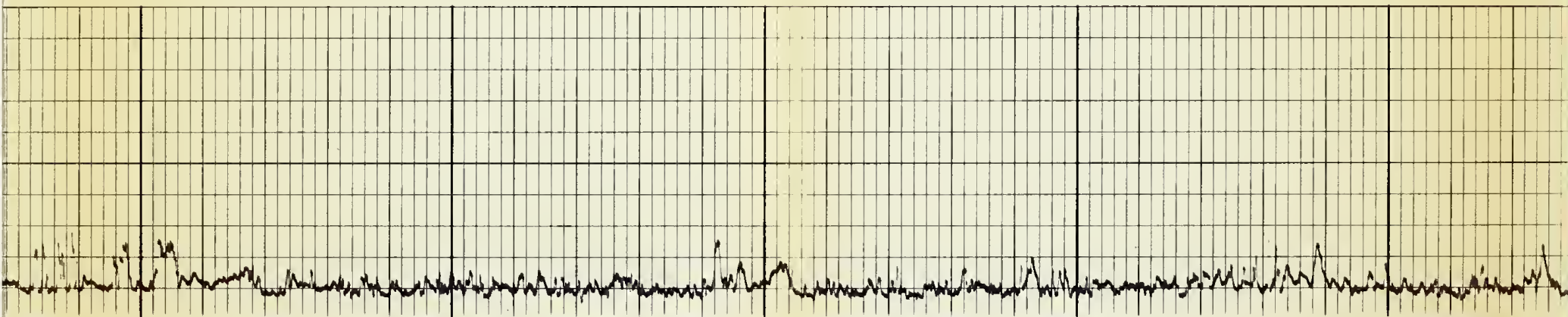
0700

0800

0900

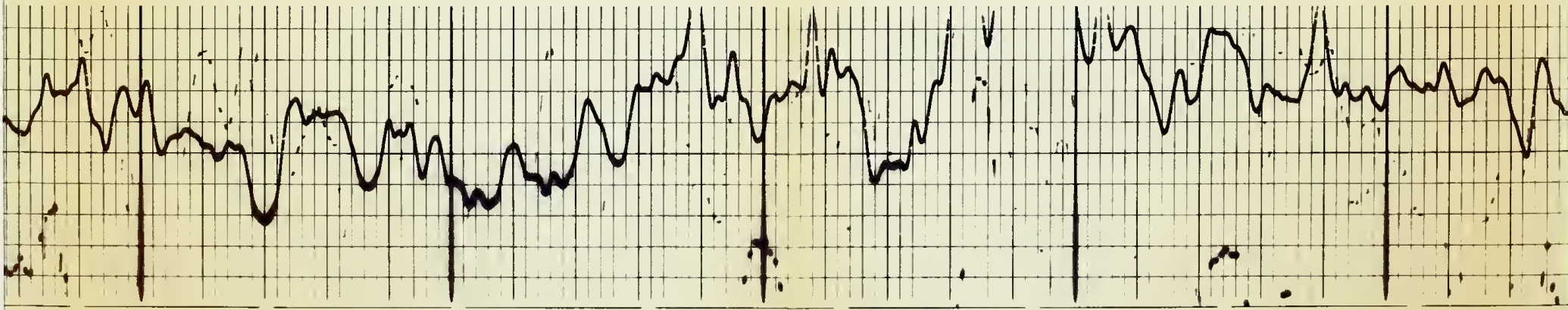




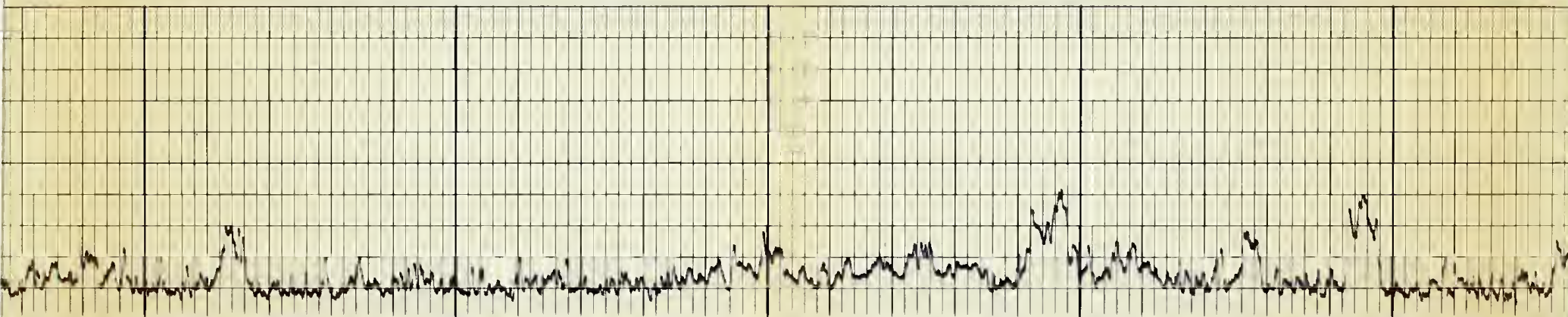
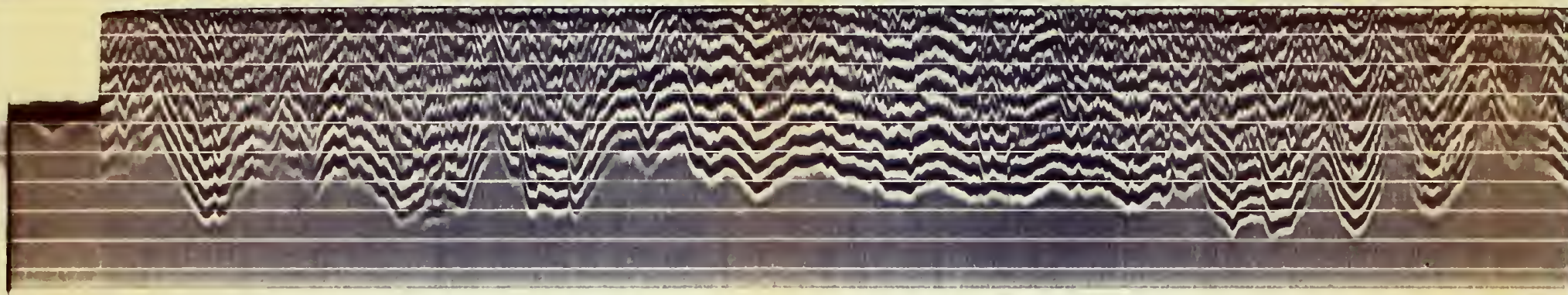


1000

1100



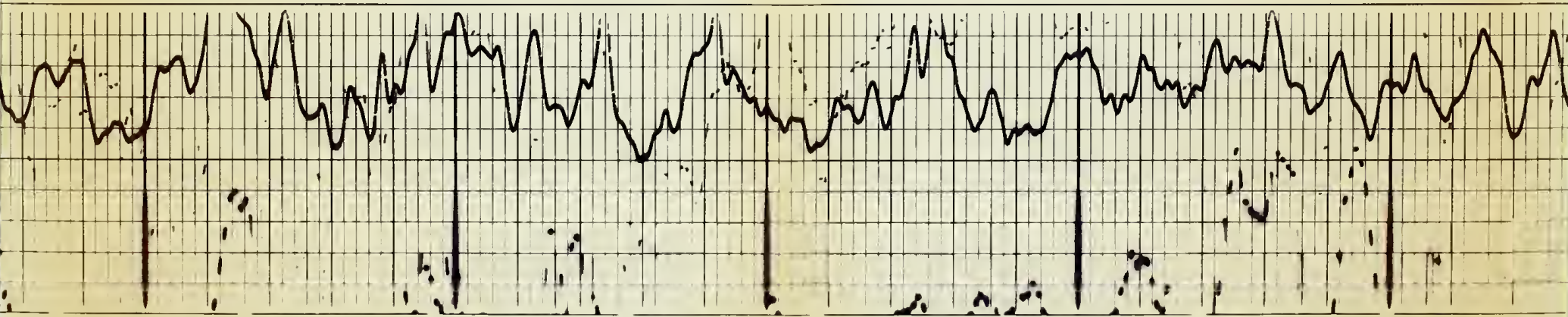




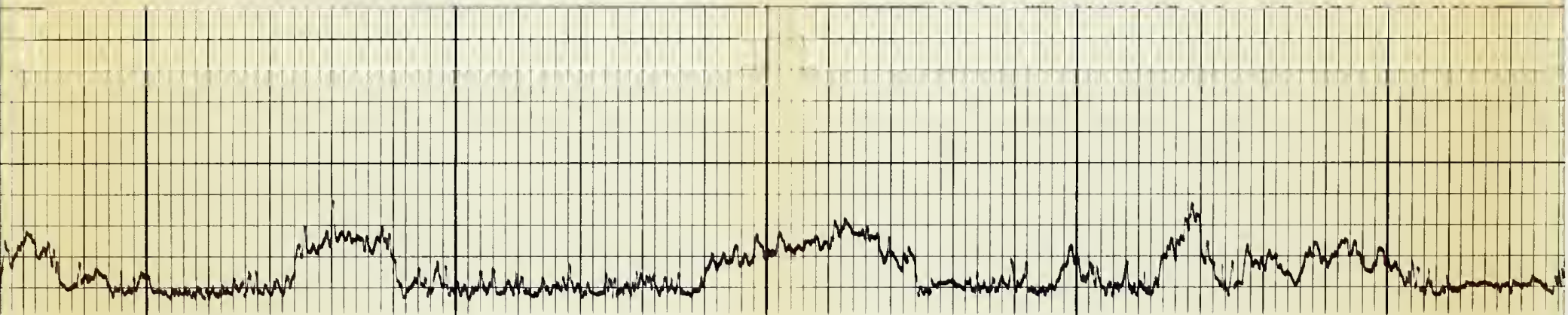
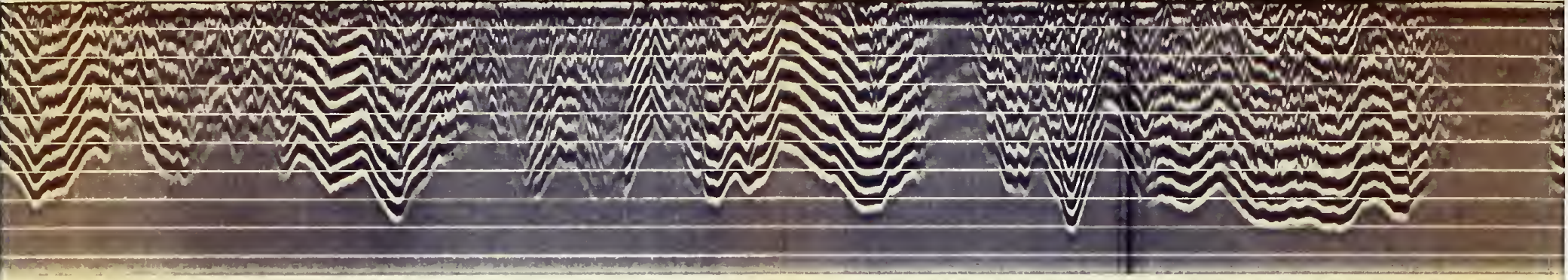
1200

1300

1400

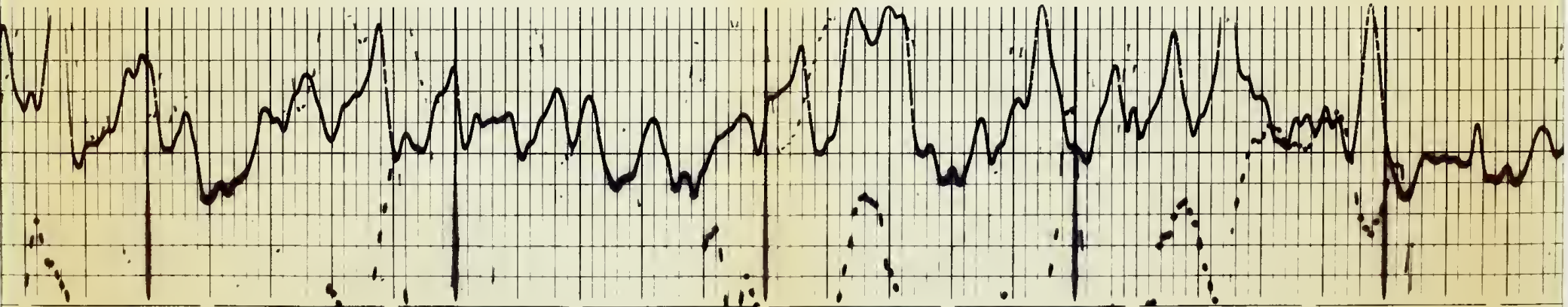




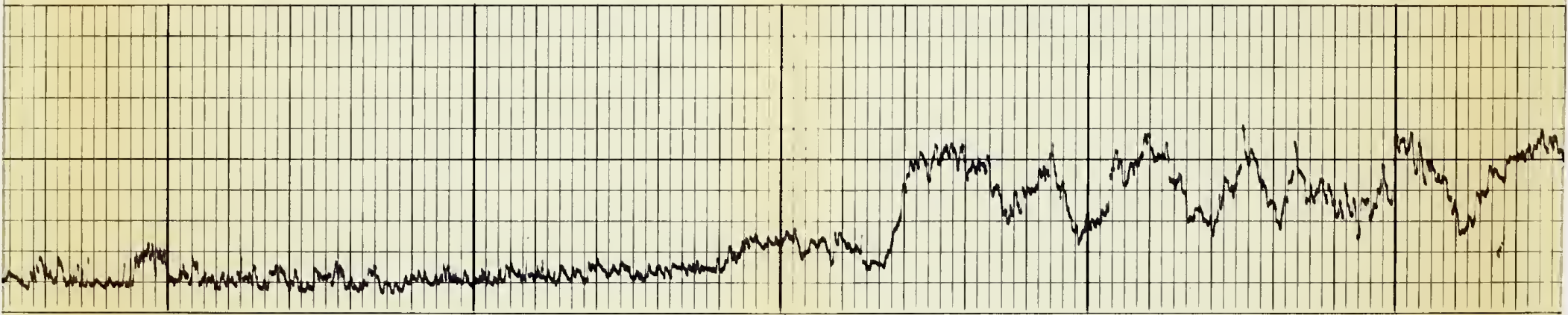
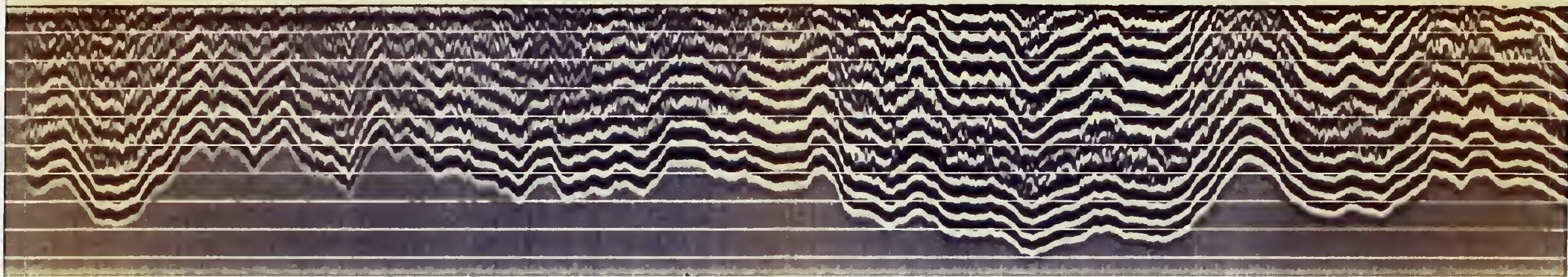


1500

1600



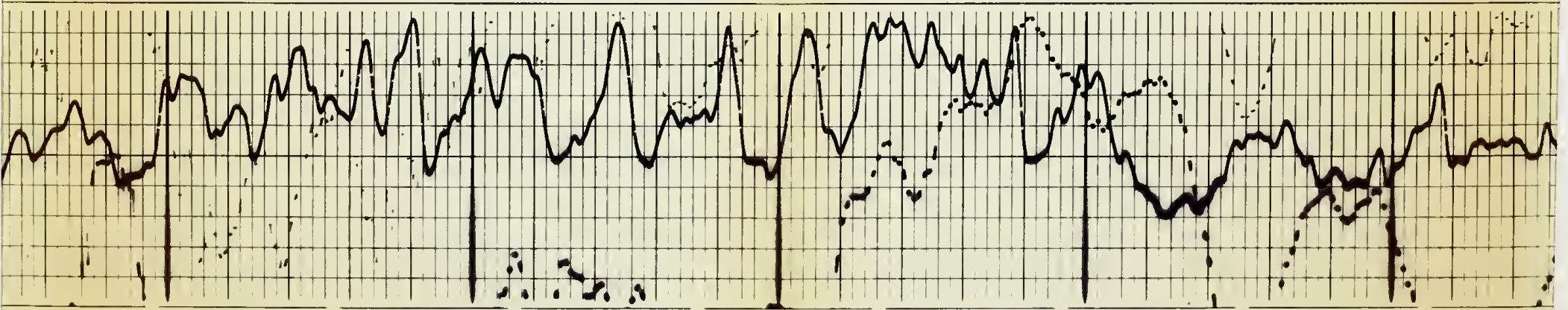




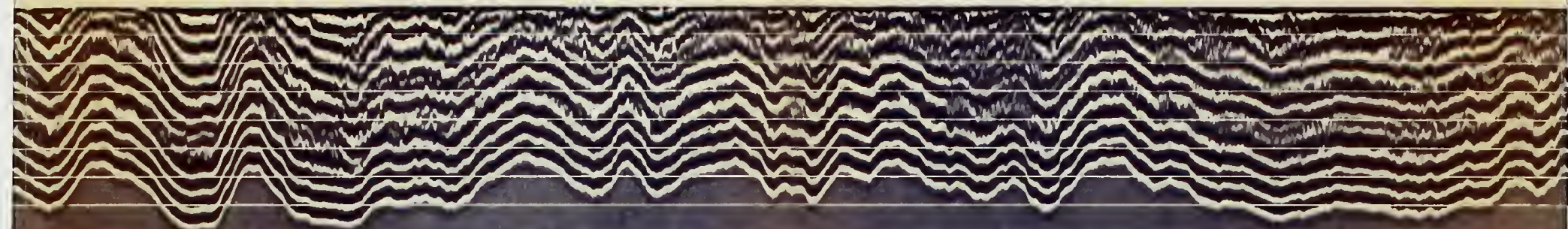
1700

1800

1900

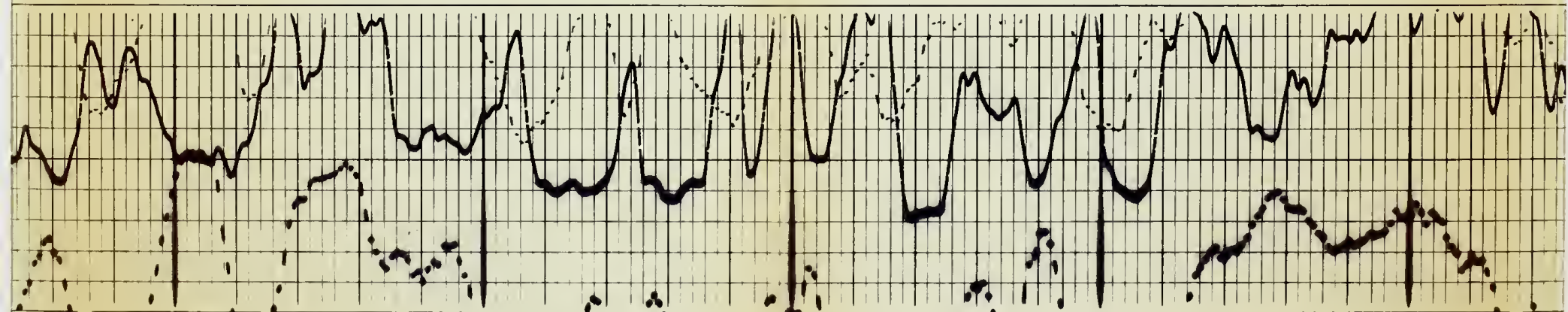




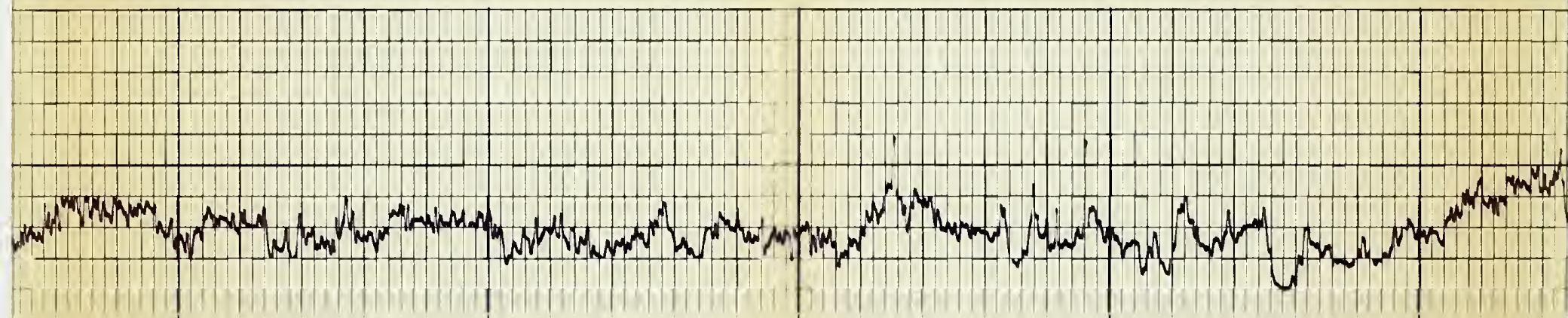
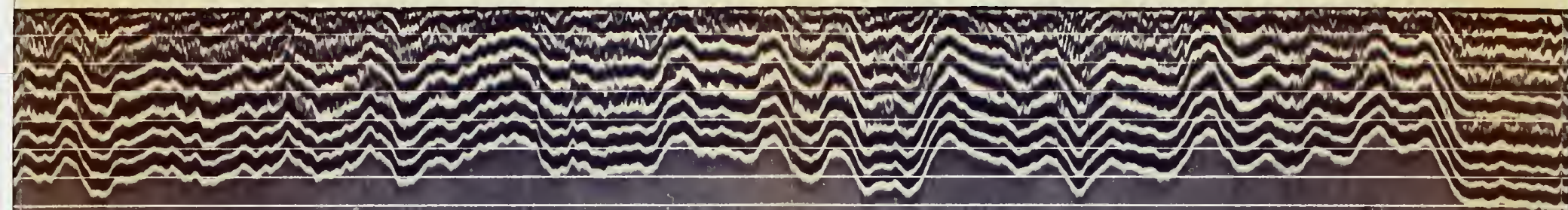


200C

2100



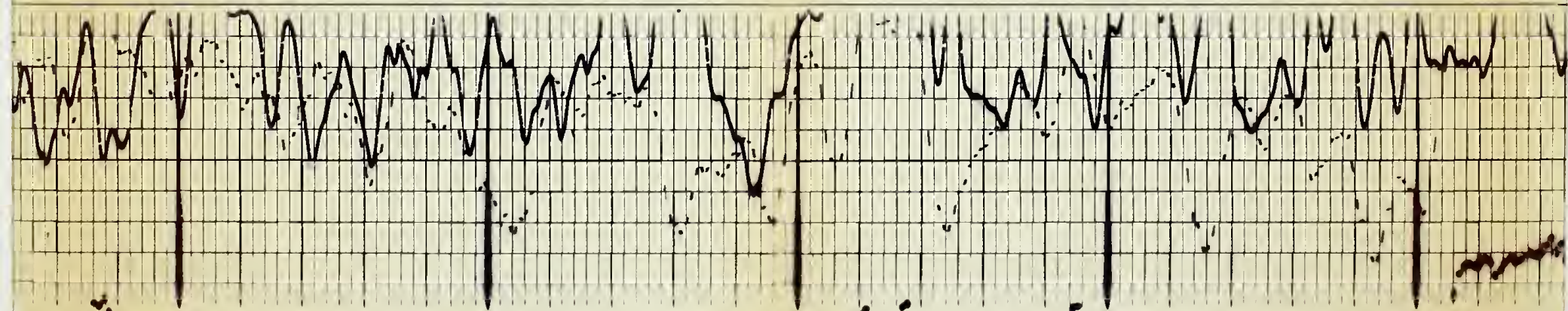




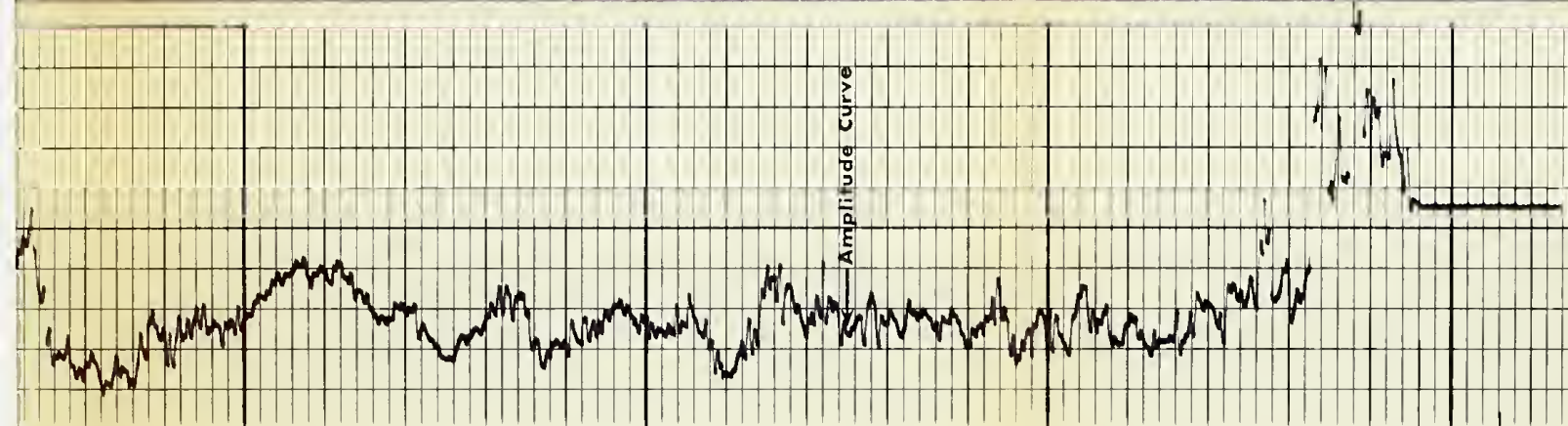
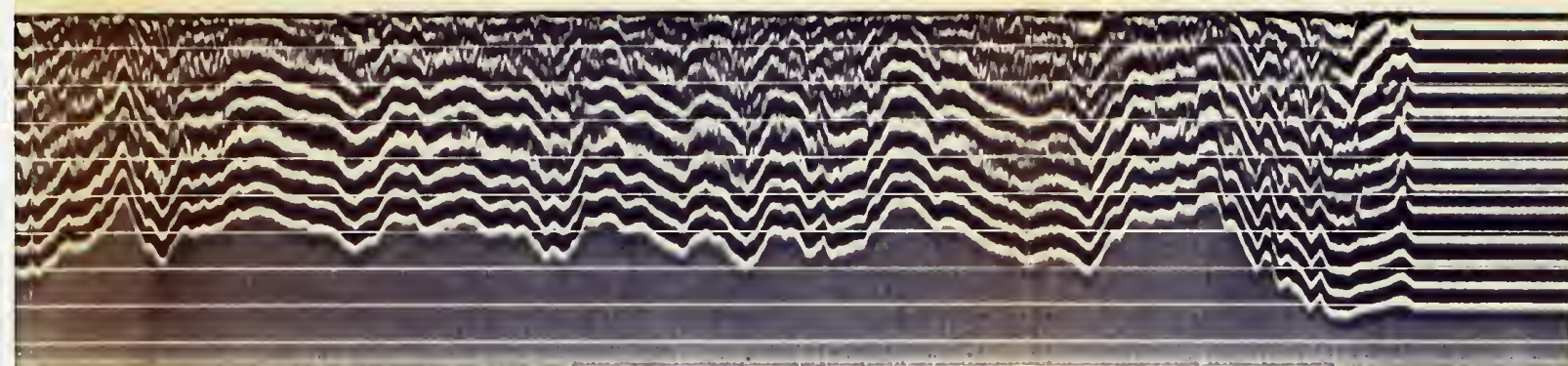
220C

230C

240C

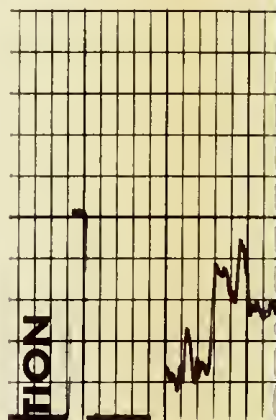
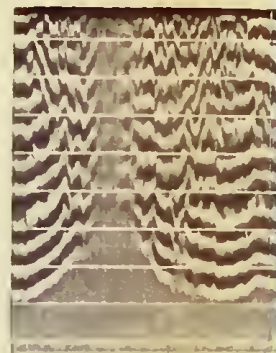
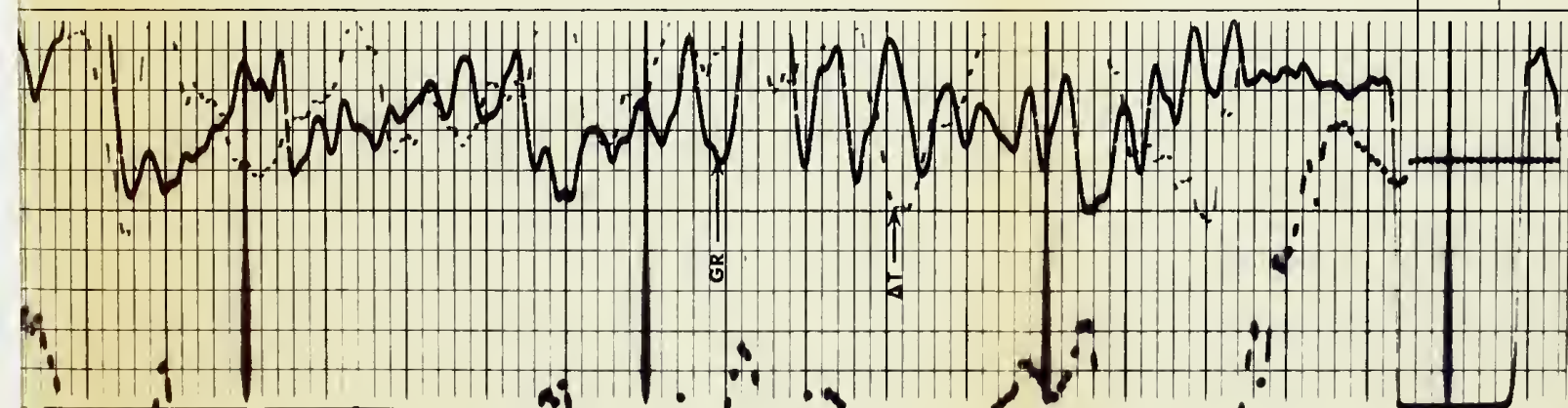






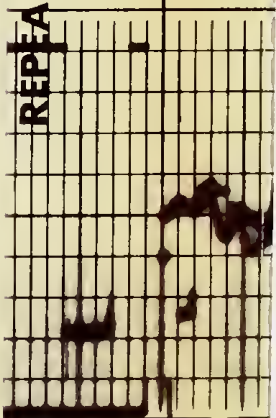
250C

260C

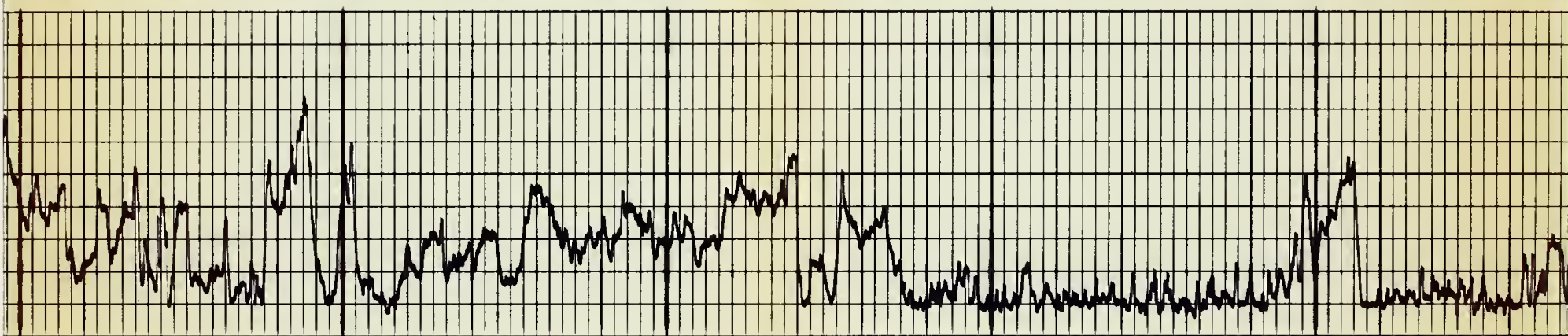
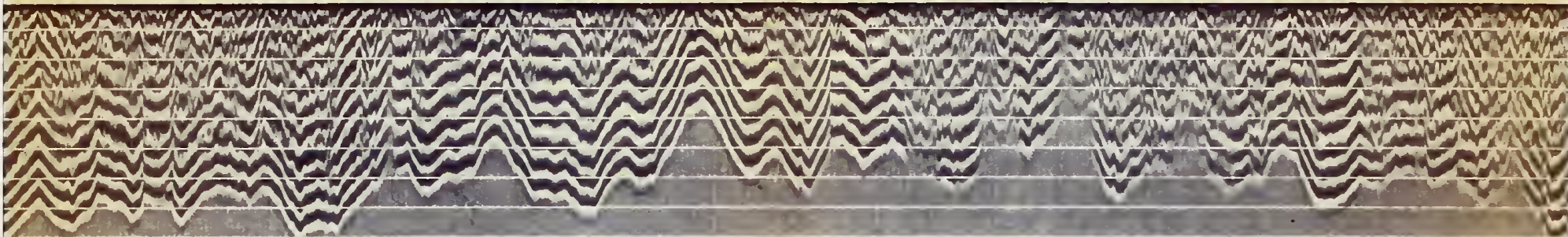


REPEAT SECTION

LR

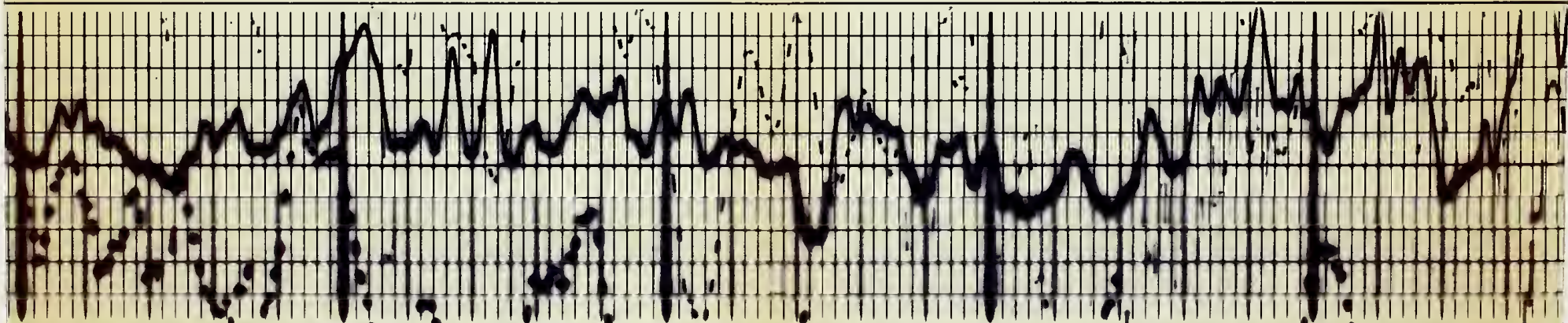




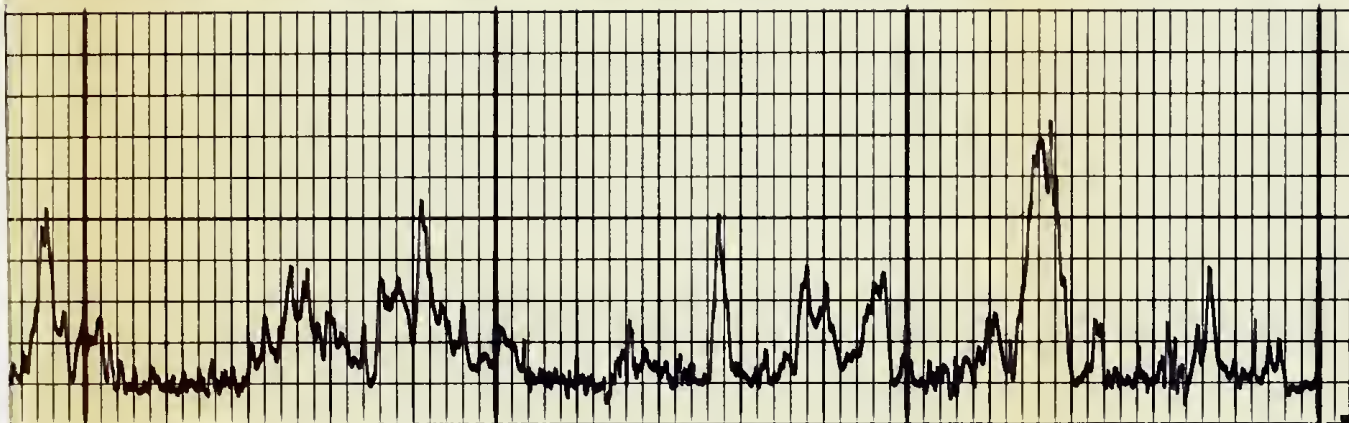
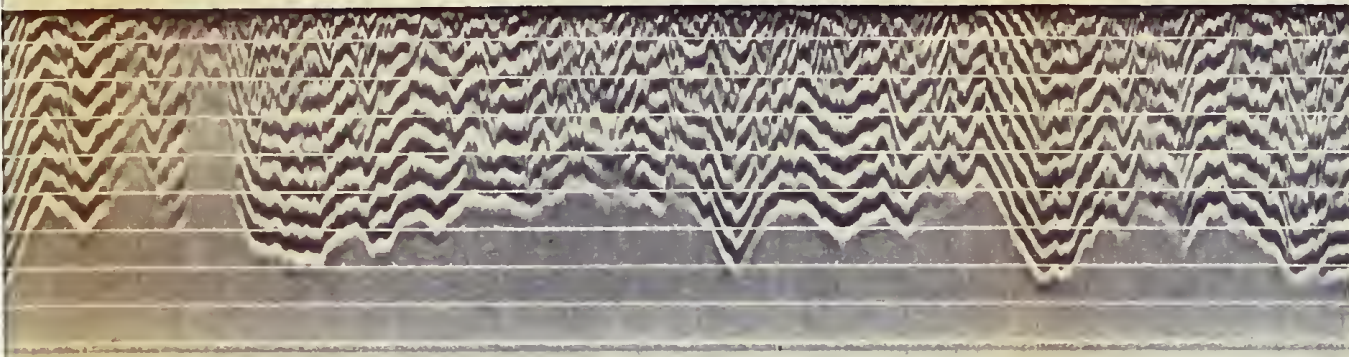


0900

1000

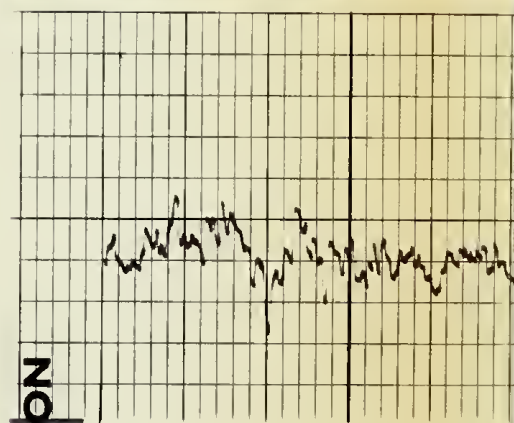
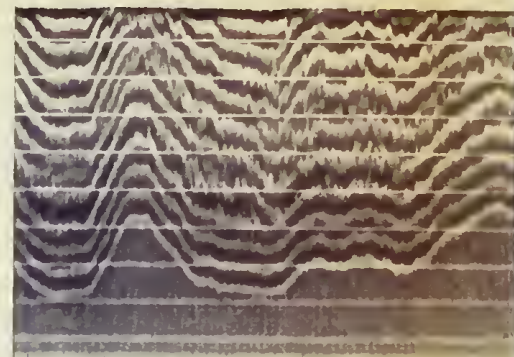






1100

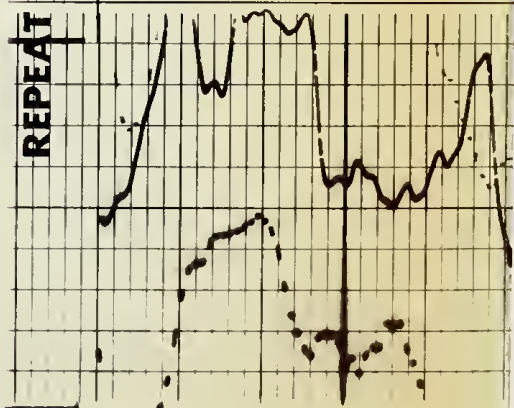
1200



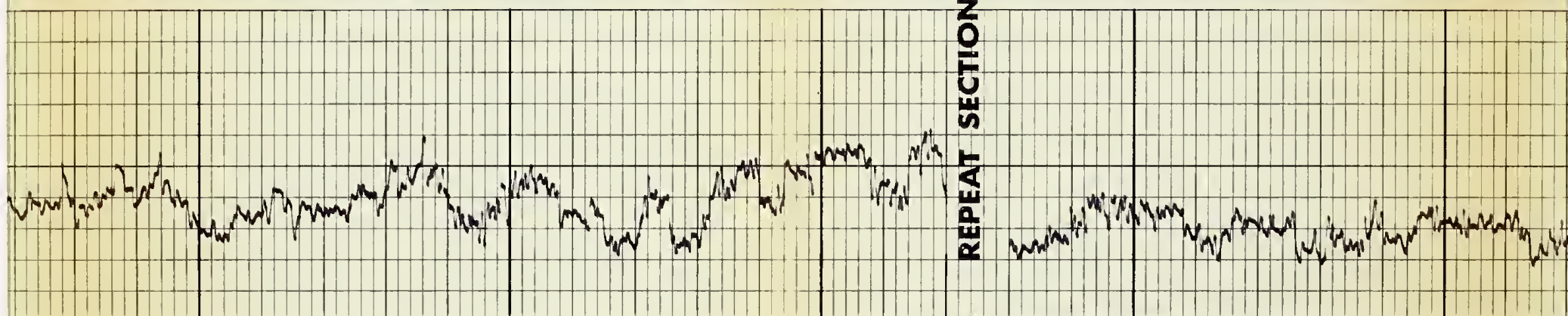
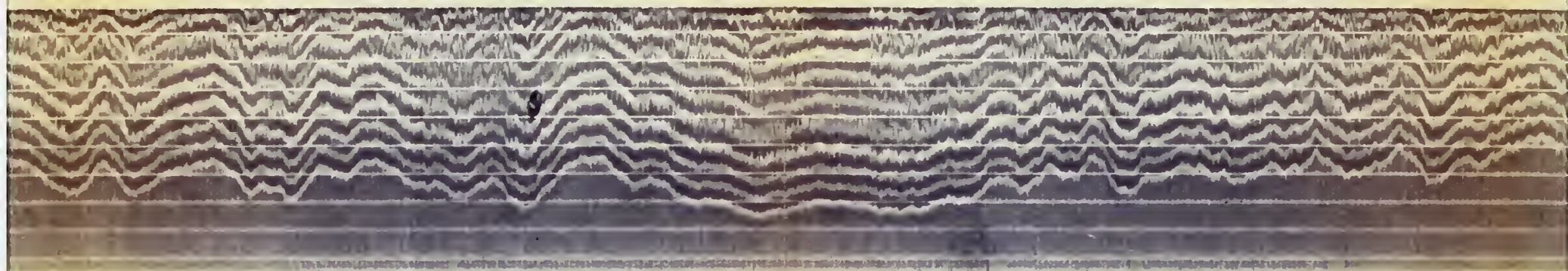
SECTION  
LR

2000

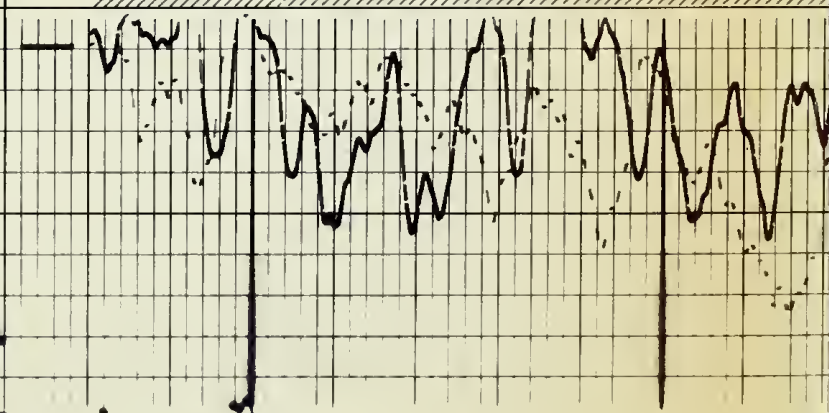
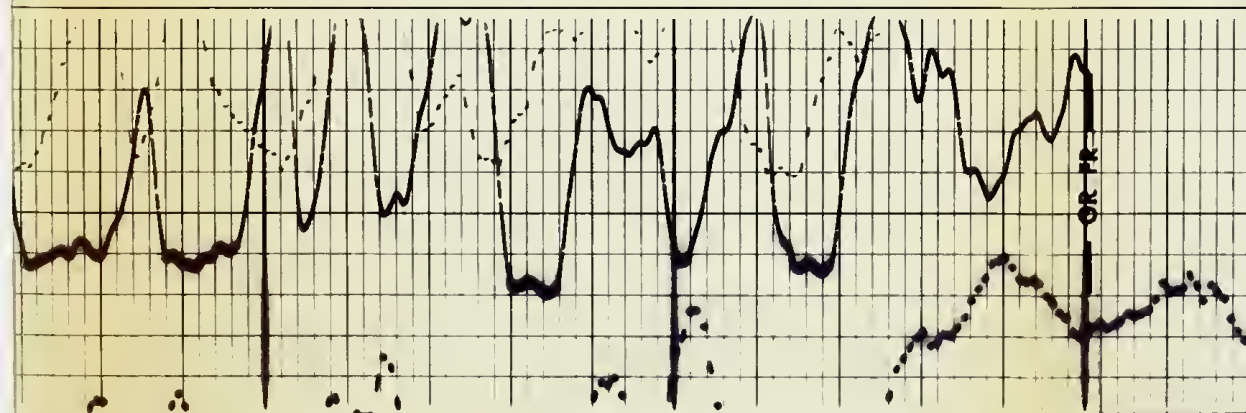
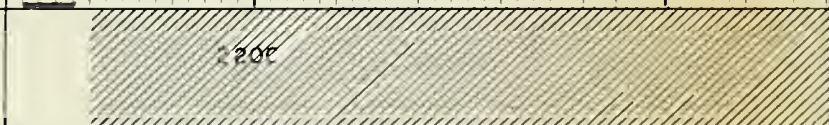
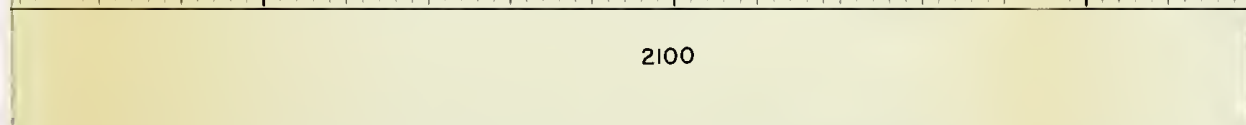
REPEAT



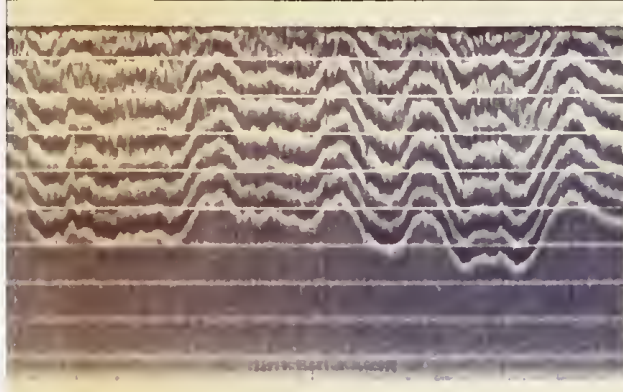
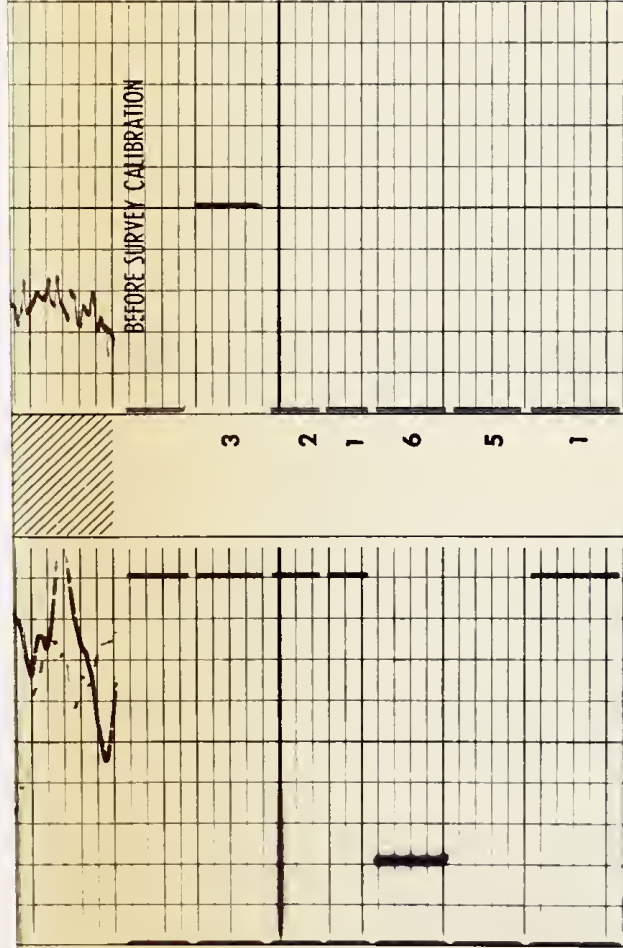




REPEAT SECTION







GAMMA RAY  
API UNITS

SINGLE RECEIVER  $\Delta T$   
microseconds

AMPLITUDE MILLIVOLTS

VARIABLE DENSITY  
MICROSECONDS

# BOREHOLE COMPENSATED SONIC CALIBRATION CODING

1. MECHANICAL ZERO
2. 40  $\mu$  SEC FT
3. 60  $\mu$  SEC FT
4. 80  $\mu$  SEC FT
5. 100  $\mu$  SEC/FT
6. 140  $\mu$  SEC/FT

# GAMMA RAY CALIBRATION CODING

1. MECHANICAL ZERO
2. ELECTRICAL ZERO
3. RECORDER SENSITIVITY
4. MEMORIZER ADJUSTMENT
5. BACKGROUND
6. CALIBRATION

COMPANY ATLANTIC RICHFIELD COMPANY

WELL SORGHUM GULCH #8

FIELD SORGHUM GULCH

COUNTY RIO BLANCO STATE COLORADO

SCHL. FR 2605  
SCHL. TD 2606  
DRLR TD 2596

Elev: KB ----  
DF 6542  
GL 6533

# BOREHOLE COMPENSATED SONIC LOG

COUNTY <u>RIO BLANCO</u> FIELD or LOCATION <u>SORGHUM GULCH</u> WELL <u>SORGHUM GULCH #8</u> COMPANY <u>ATLANTIC RICHFIELD</u>	COMPANY <u>ATLANTIC RICHFIELD COMPANY</u>  WELL <u>SORGHUM GULCH #8</u> FIELD <u>SORGHUM GULCH</u> COUNTY <u>RIO BLANCO</u> STATE <u>COLORADO</u> 
LOCATION: <u>2600' FWL &amp; 2301' FSL</u> API Serial No. _____ Sec. <u>9</u> Twp. <u>35S</u> Rge. <u>96W</u>	
Other Services: <u>LL-7</u> <u>HRT</u> <u>FDC</u> <u>AMP-VDL</u>	
Permanent Datum: <u>GL</u> ; Elev.: <u>6538</u> Log Measured From <u>GL</u> , _____ Ft. Above Perm. Datum Drilling Measured From <u>GL</u>	
Elev.: K.B. _____ D.F. <u>6542</u> G.L. <u>6538</u>	

Date	<u>11-28-74</u>					
Run No.	<u>ONE</u>					
Depth-Driller	<u>2608</u>					
Depth-Logger	<u>2610</u>					
Btm. Log Intervol	<u>2607</u>					
Top Log Intervol	<u>167</u>					
Casing-Driller	<u>8 5/8@176</u>	@	@	@		
Casing-Logger	<u>167</u>					
Bit Size	<u>6-1/4</u>					
Type Fluid in Hole	<u>WATER</u>					
Dens.	Visc.					
pH	Fluid Loss		ml	ml	ml	ml
Source of Sample		<u>MUDPIT</u>				
R <sub>m</sub> @ Meas. Temp.	<u>3.79@68</u>	°F	@	°F	@	°F
R <sub>mf</sub> @ Meas. Temp.	<u>CLEAR@</u>	°F	@	°F	@	°F
R <sub>mf</sub> @ Meas. Temp.	<u>WATER@</u>	°F	@	°F	@	°F
Source: R <sub>mf</sub>   R <sub>mc</sub>	<u>AIR DRILLED</u>					
R <sub>m</sub> @ BHT	<u>2.05@126</u>	°F	@	°F	@	°F
TIME	Circulation Stopped					
	<u>1700 HOURS</u>					
Max. Rec. Temp.	<u>126</u>	°F		°F		°F
Equip.	<u>7674 VRNI</u>					
Recorded By	<u>DALTON-EITER</u>					
Witnessed By	<u>BURNS-TAIT</u>					

The well name, location and borehole reference data were furnished by the customer.

Run No.	ONE					SCALE CHANGES			
Service Order No.	28182					Type Log	Depth	Scale Up Hole	Scale Down Hole
Fluid Level	VARING - 100'								
EQUIPMENT DATA									
Sonic Panel No.	493								
Sonic Cart No.	141								
Sonic Sonde No.	161								
Mem. Panel No.	173								
G.R. Cart. No.	98								
G.R. Panel No.	355								
Caliper No.	-								
TTR No.	-								
Centralizers: No.	1								
Type	VCD								
Stondoffs: No.	2								
Type	1-1/2								
Time Const.-Sec.	2								
Speed - F.P.M.	30								
GAIN	1-1/5								
CALIBRATION DATA									
BKG. CPS	90								
GR	Source CPS								
	530								
Tc Sec	CAL								
REMARKS WELL PRODUCING FLUID. GLOBS OF OIL IN WATER.									
COULD NOT CALIBRATE CALIPER AS RIG TOO SHORT FOR LENGTH OF TOOLS. MADE UP LIKE DRILL PIPE. (3FT. CONELATION TO FDC)									
ALL SPEEDS 30'/MIN. 1,000,000									
Velocity (ft/sec) = Interval Transist Time (microseconds per foot)									

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to Clause 7 of our General Terms and Conditions as set out in our current Price Schedule.

CALIPER		DIAM. IN INCHES	DEPTH	INTERVAL TRANSIT TIME	MICROSECONDS PER FOOT	T <sub>3</sub> R <sub>1</sub> 2 R <sub>2</sub> —
5	CORRELATION ONLY	15		150	100	50
					200	150



GAMMA RAY

API UNITS

0 150 300

LR

0100

Casing

0200

0300

0400

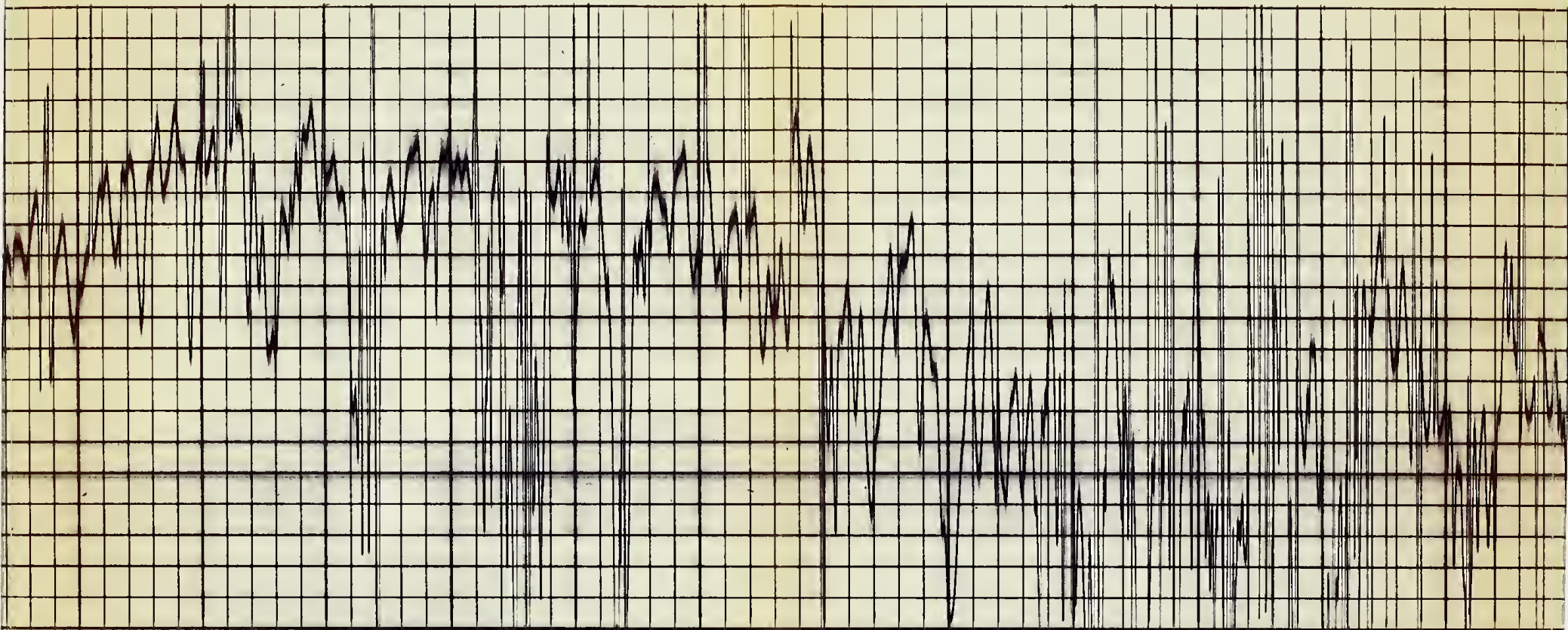
0500

Caliper

GR

AT





0600

0700

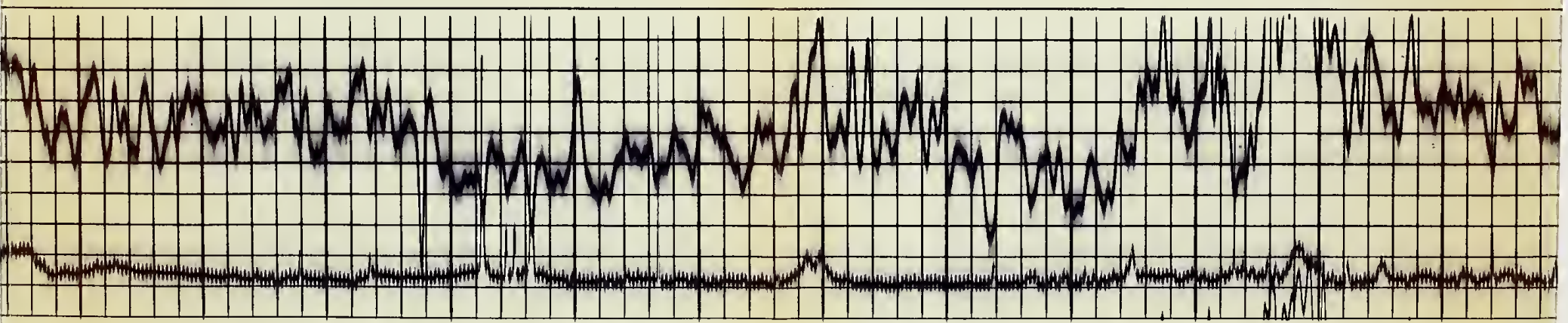
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0900

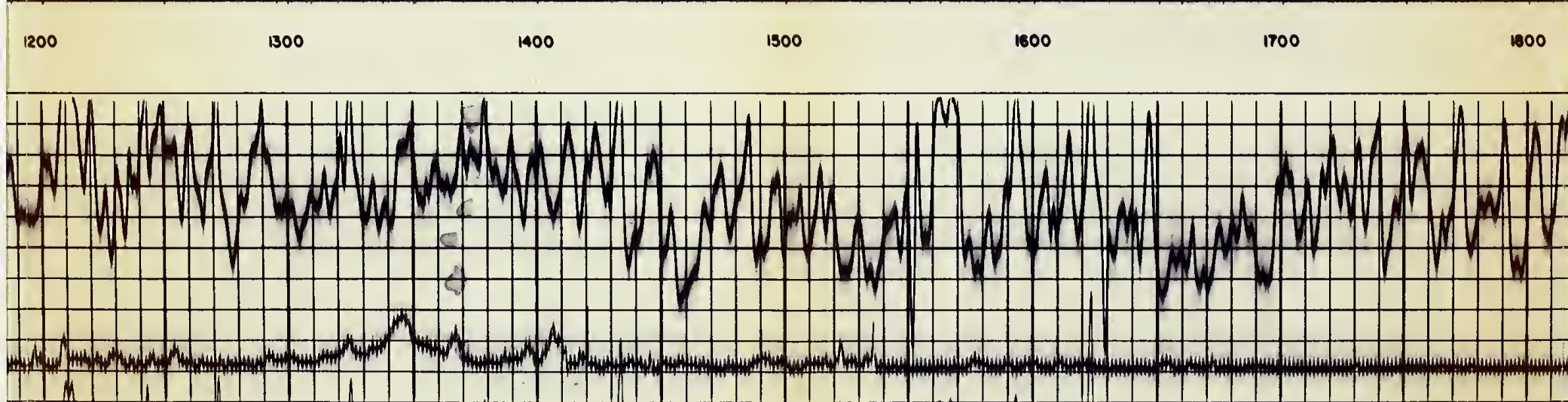
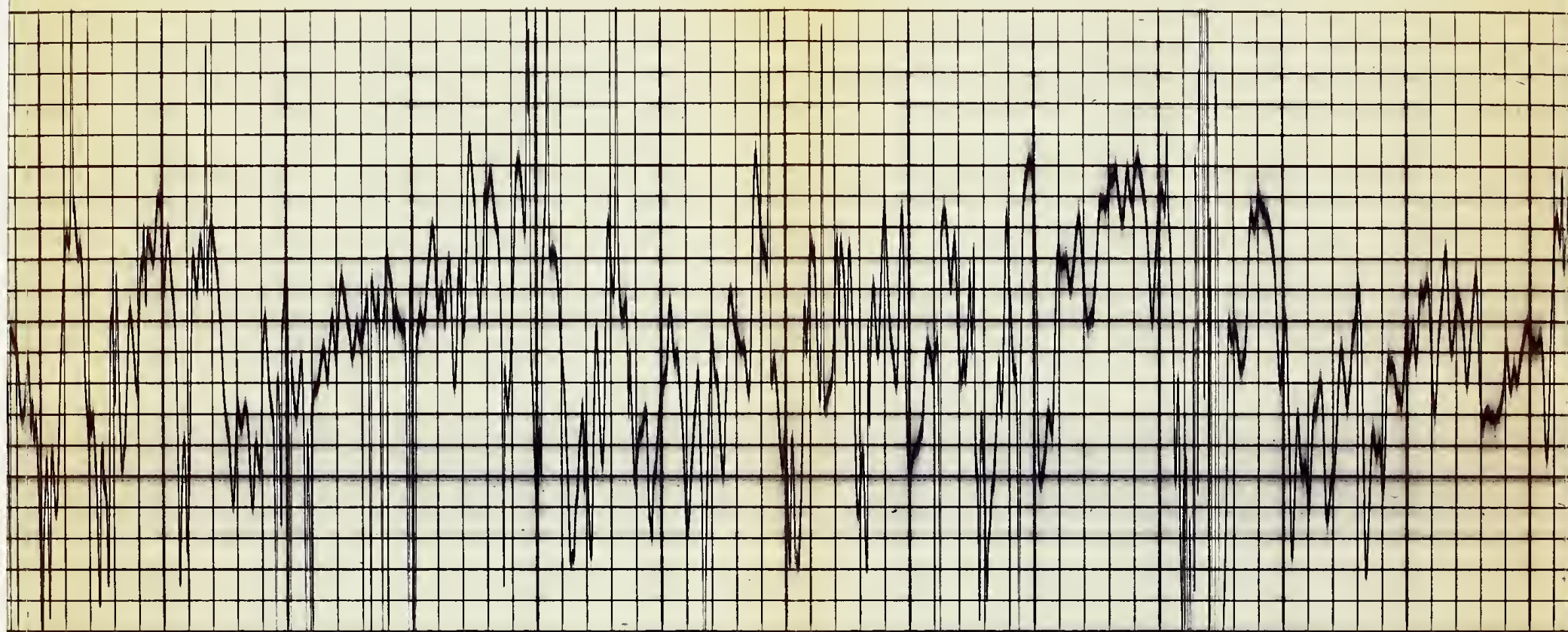
1000

1100

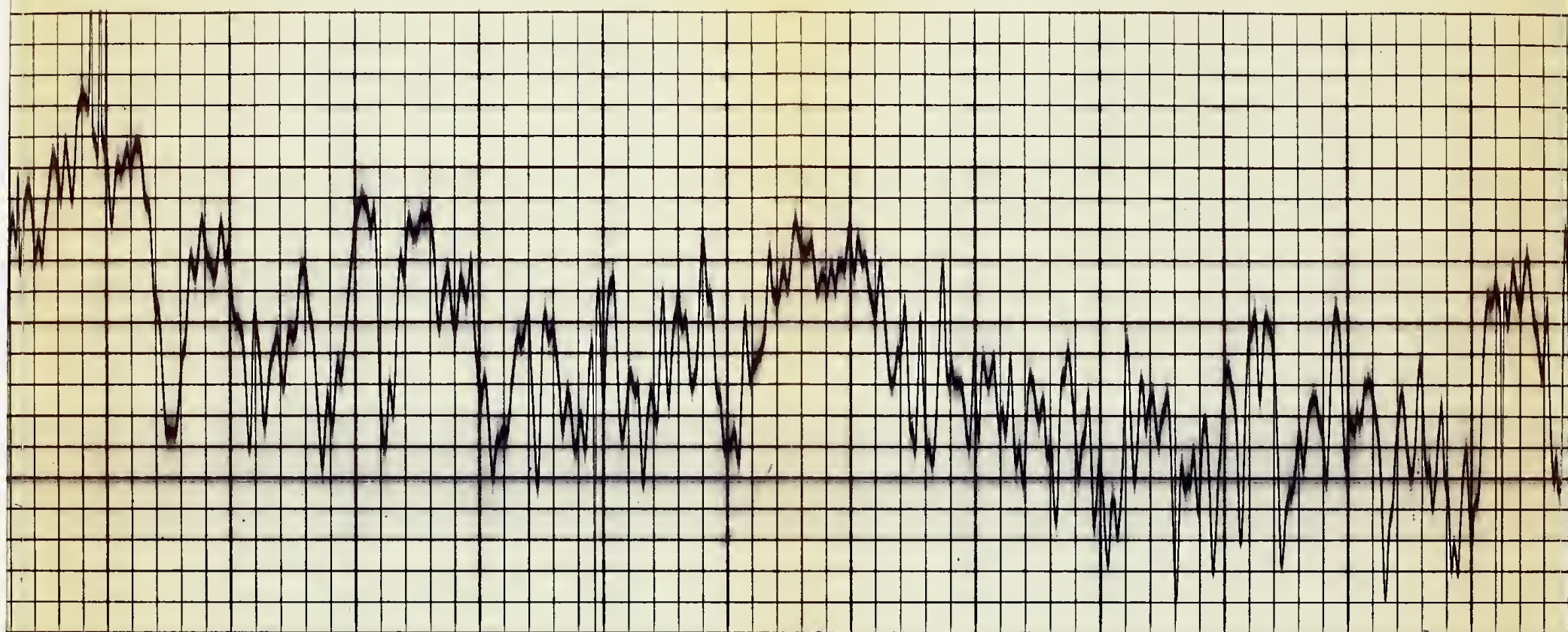
1200











1900

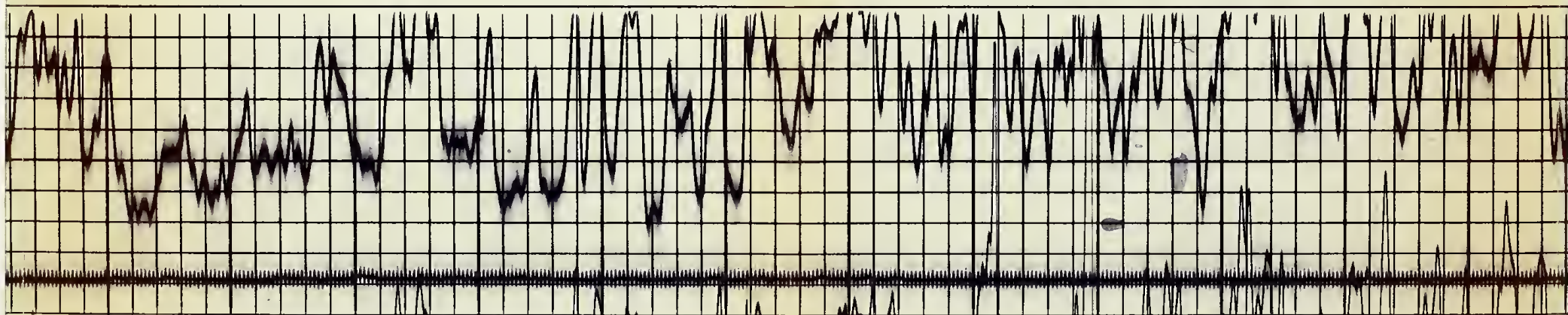
2000

2100

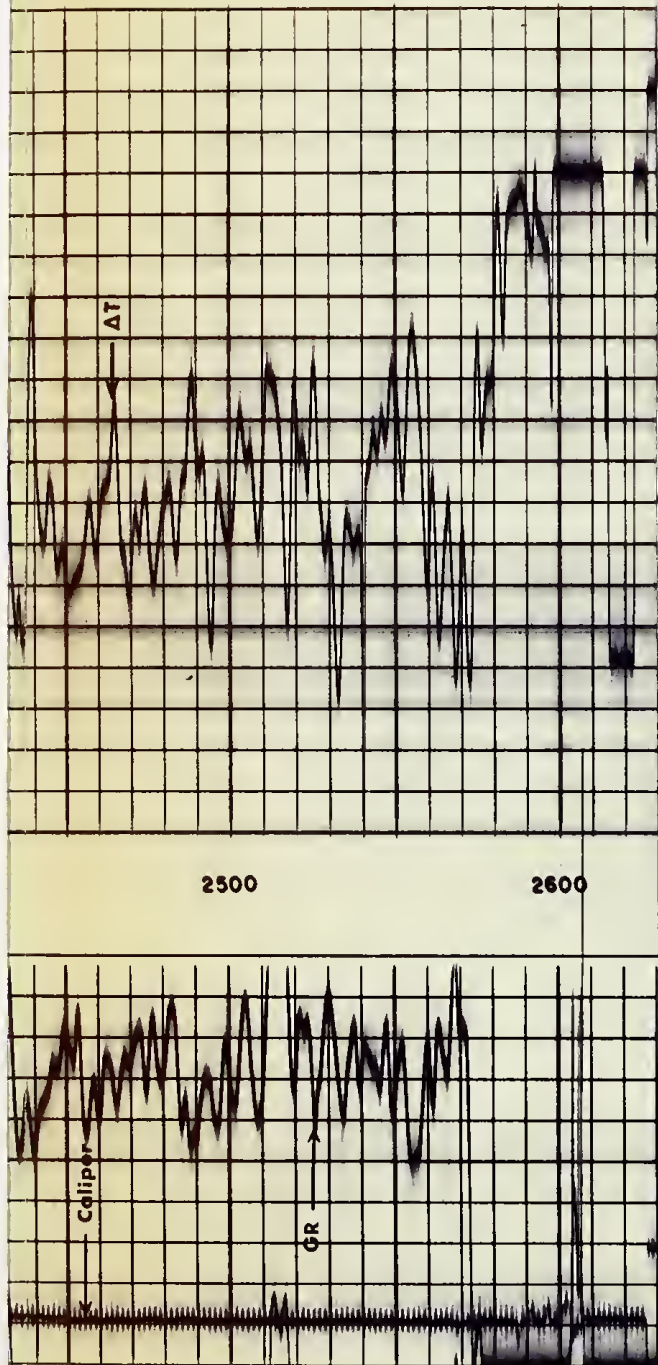
2200

2300

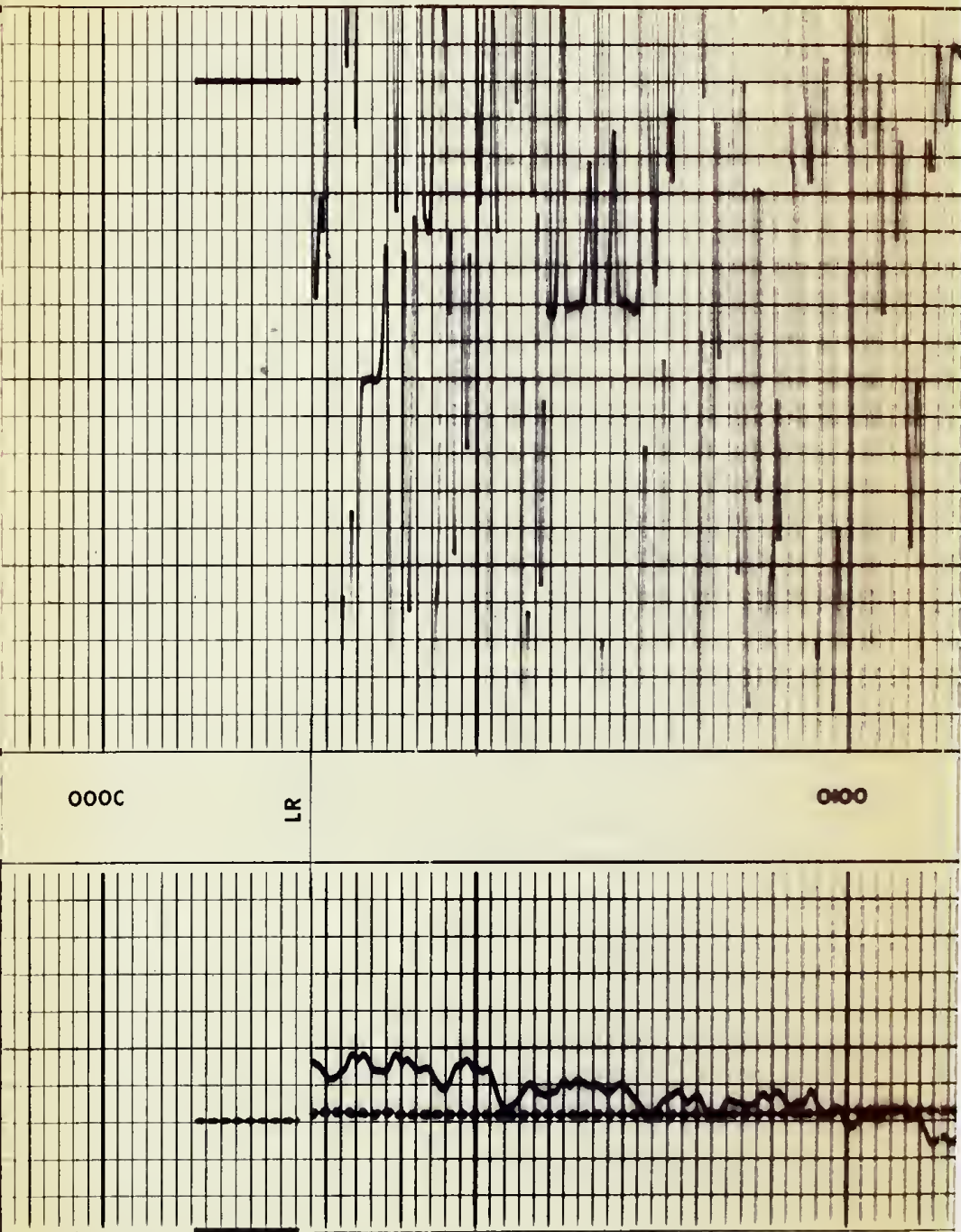
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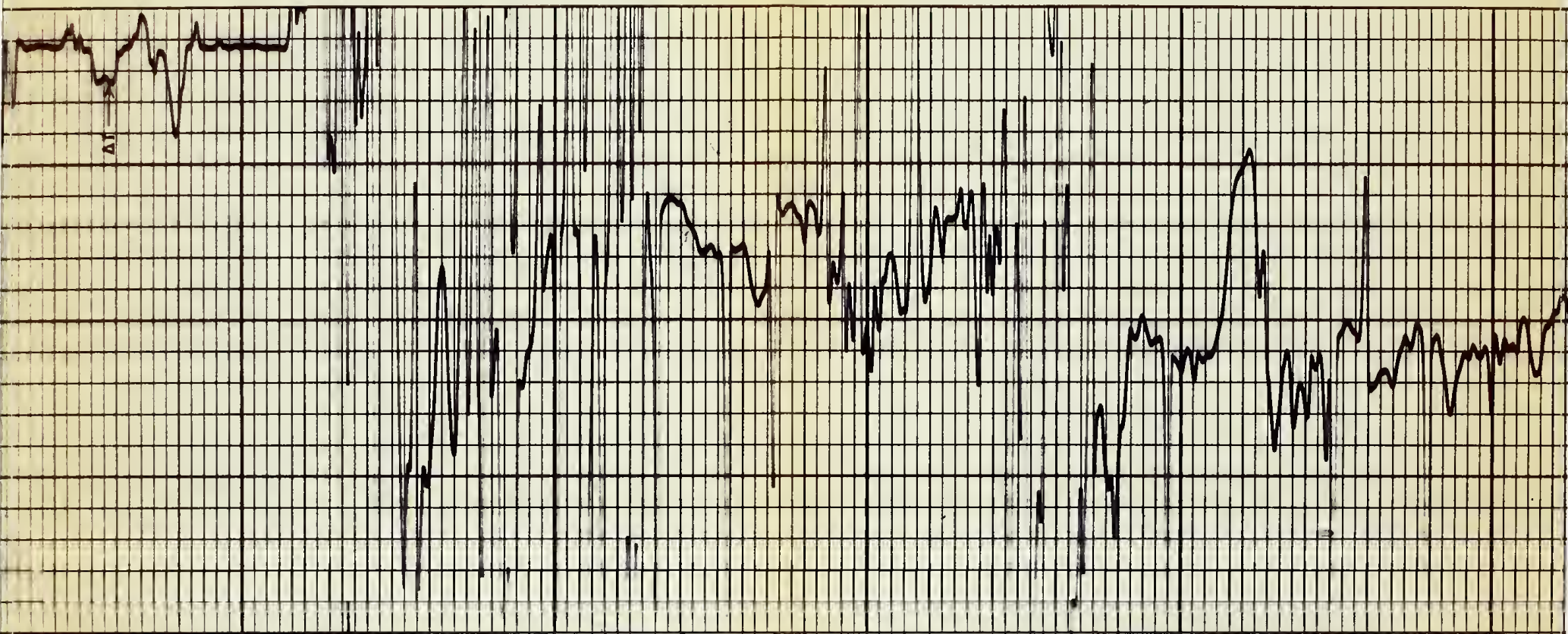




DETAIL LOG	
5" = 100'	
CALIPER DIA. IN INCHES CORRELATION ONLY	INTERVAL TRANSIT TIME MICROSECONDS PER FOOT
5 15	150 100 50
GAMMA RAY API UNITS	T 3 R1 2 R2
0 150 300	
DEPTH	



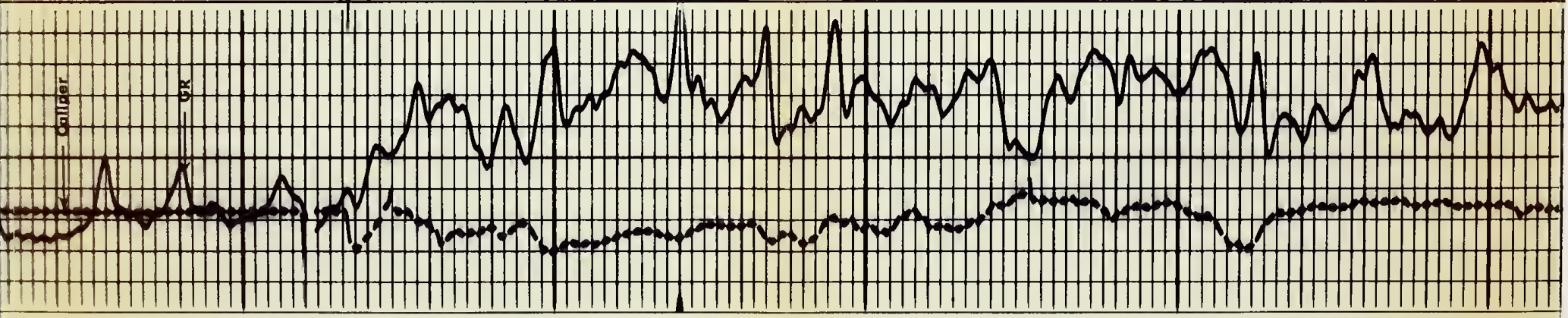




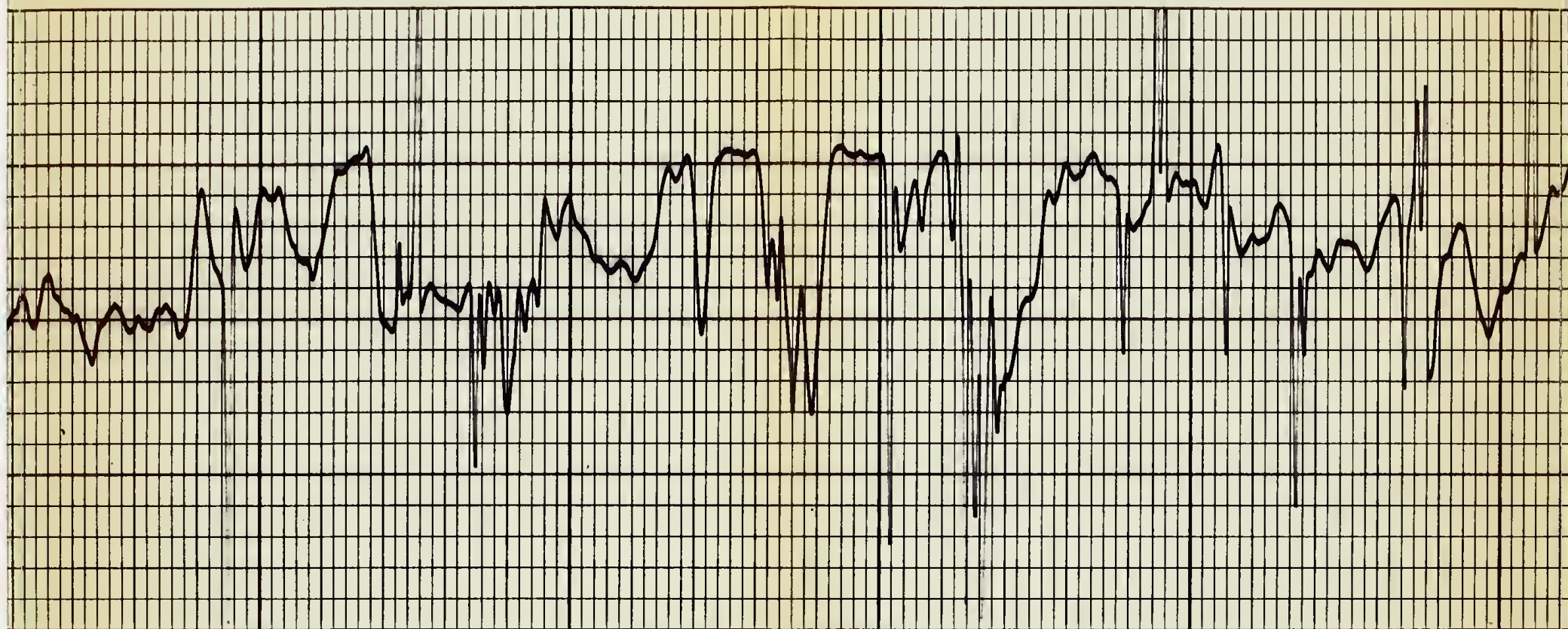
Casing

0200

0300





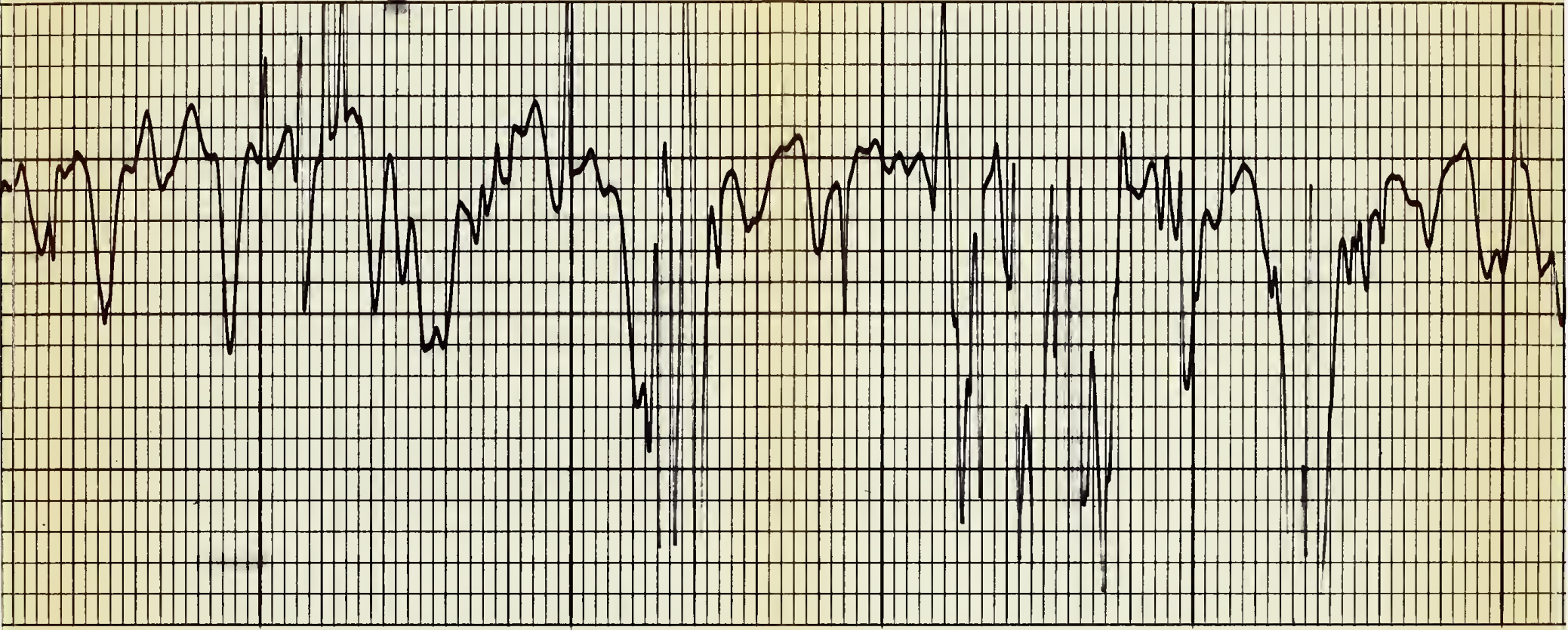


0400

0500

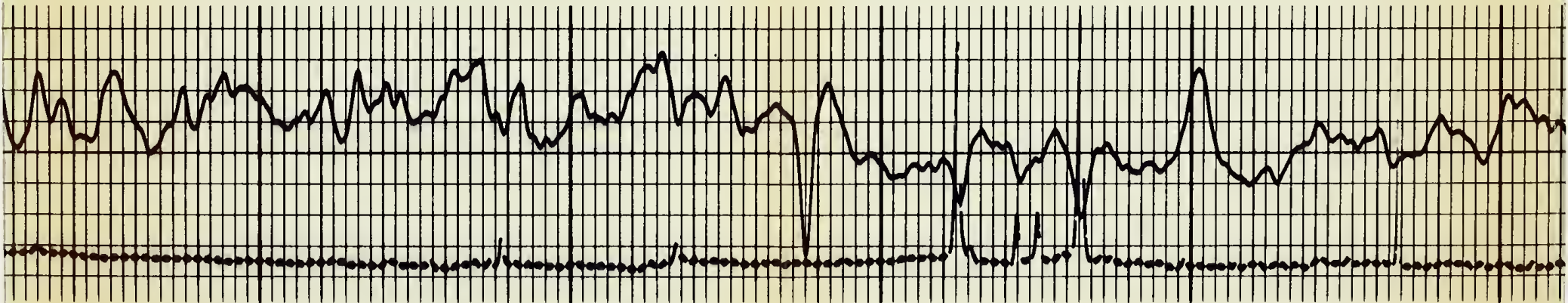
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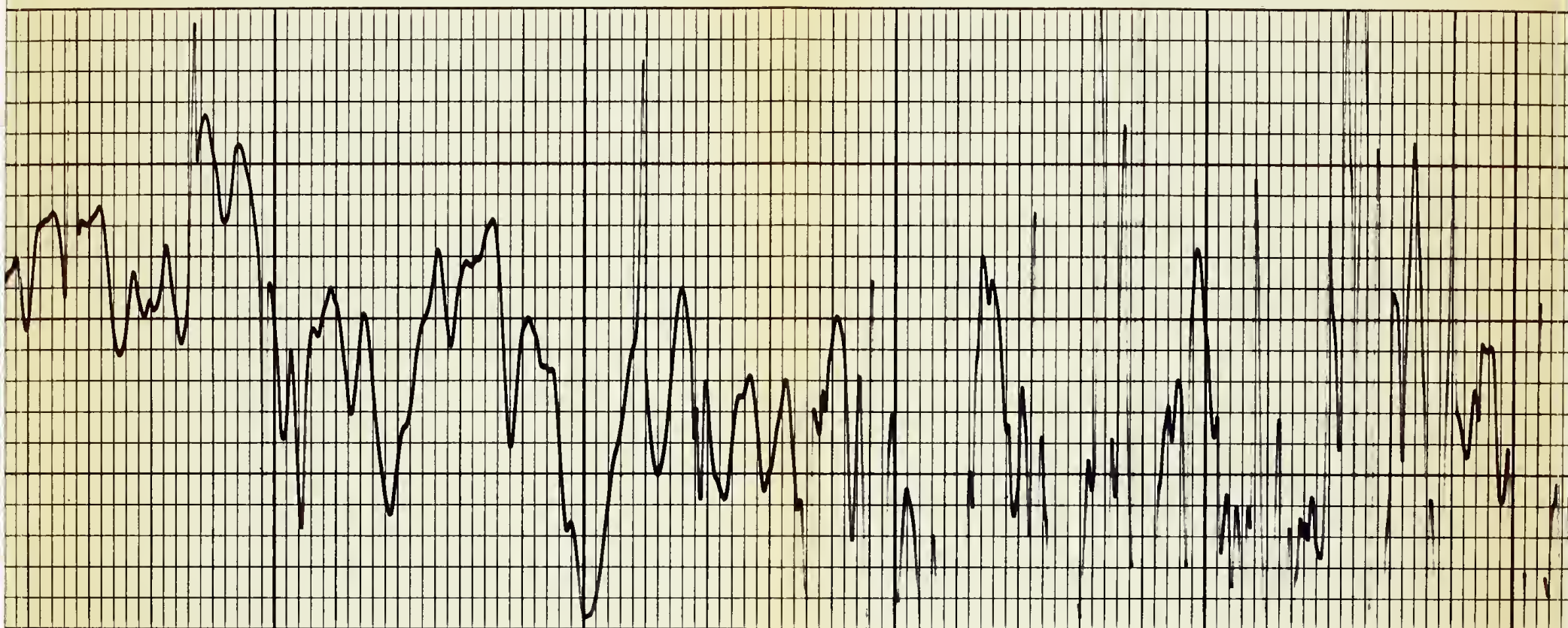


0700

0800



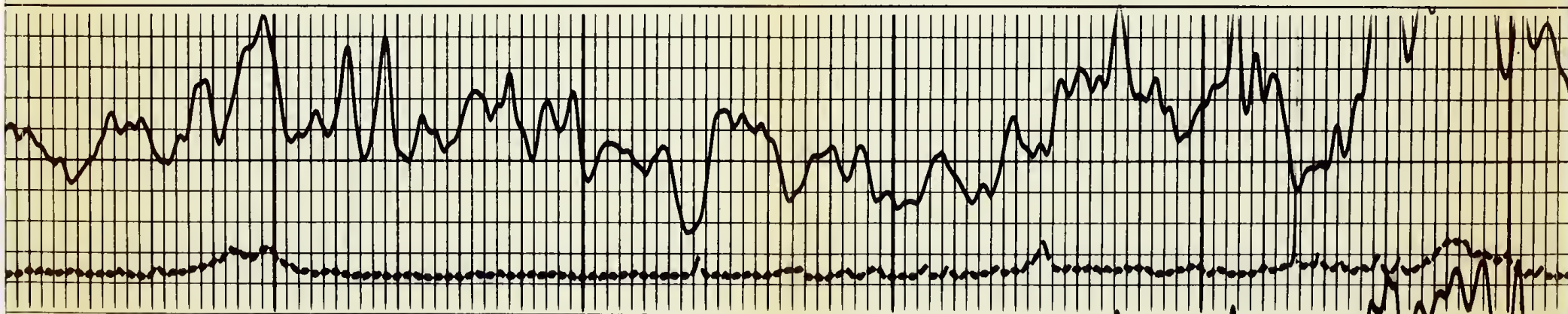


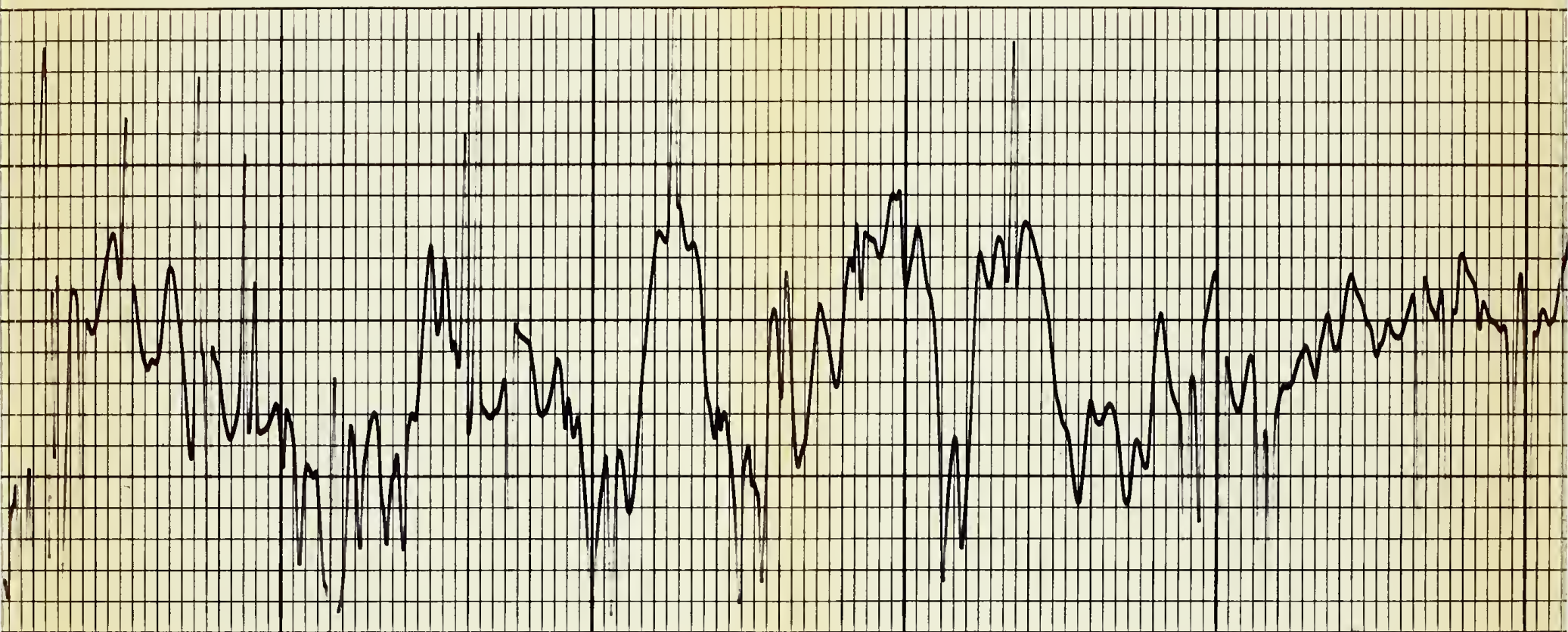


0900

1000

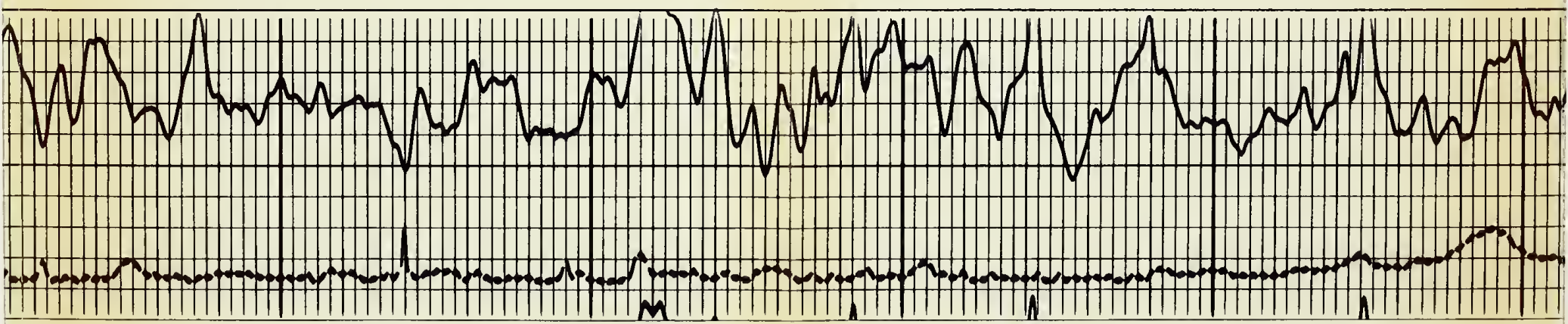
1100



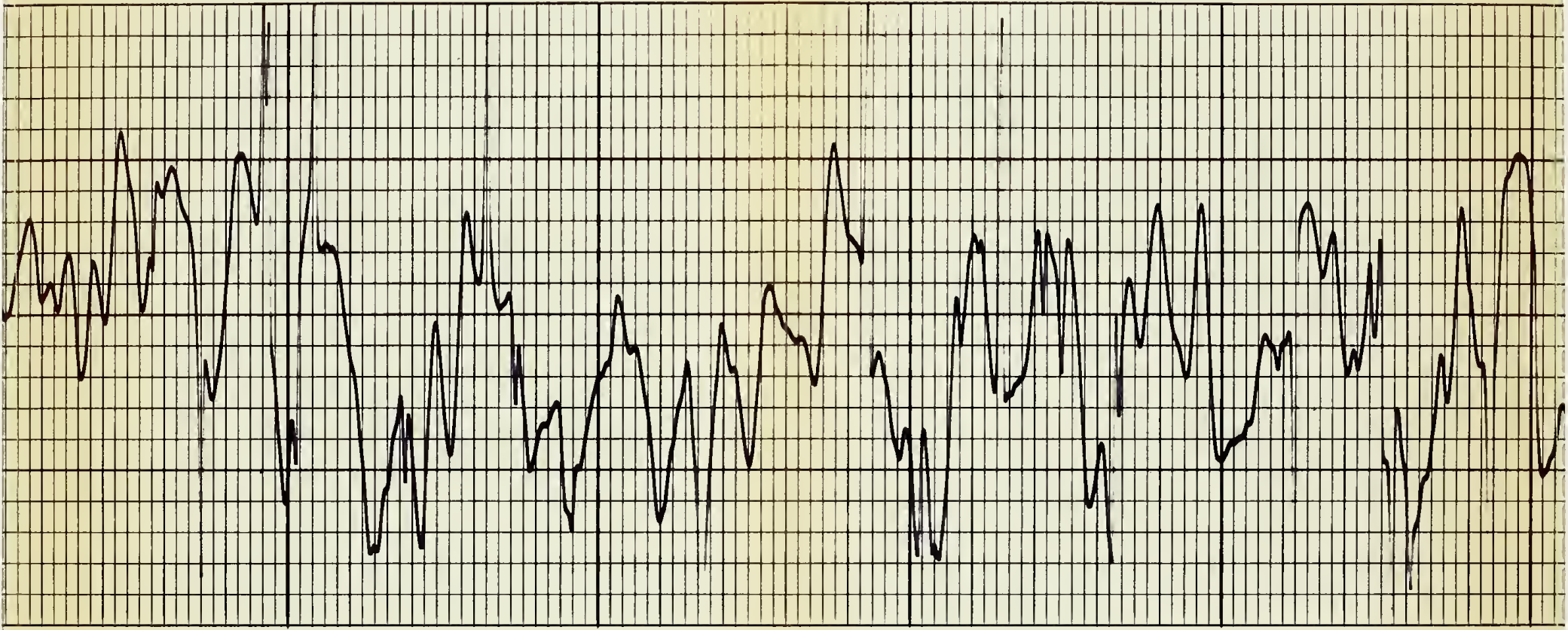


1200

1300



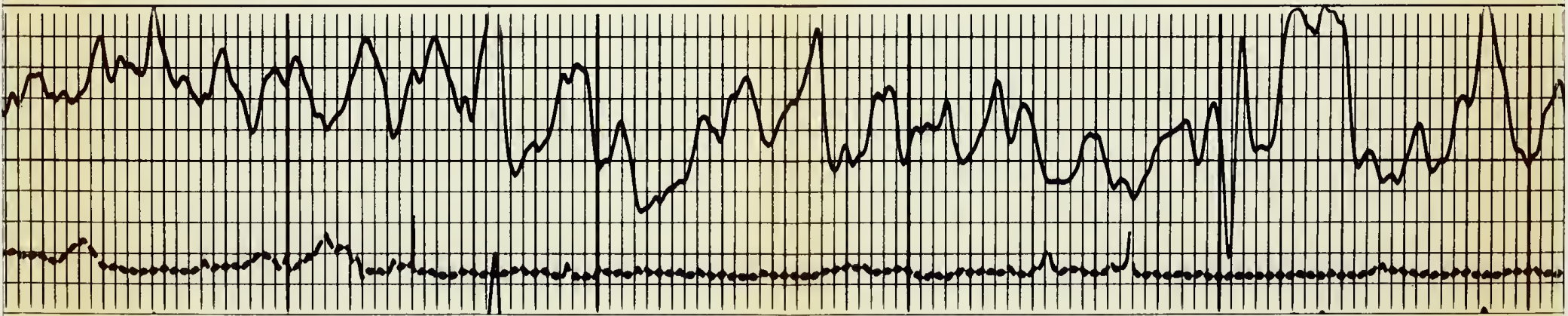


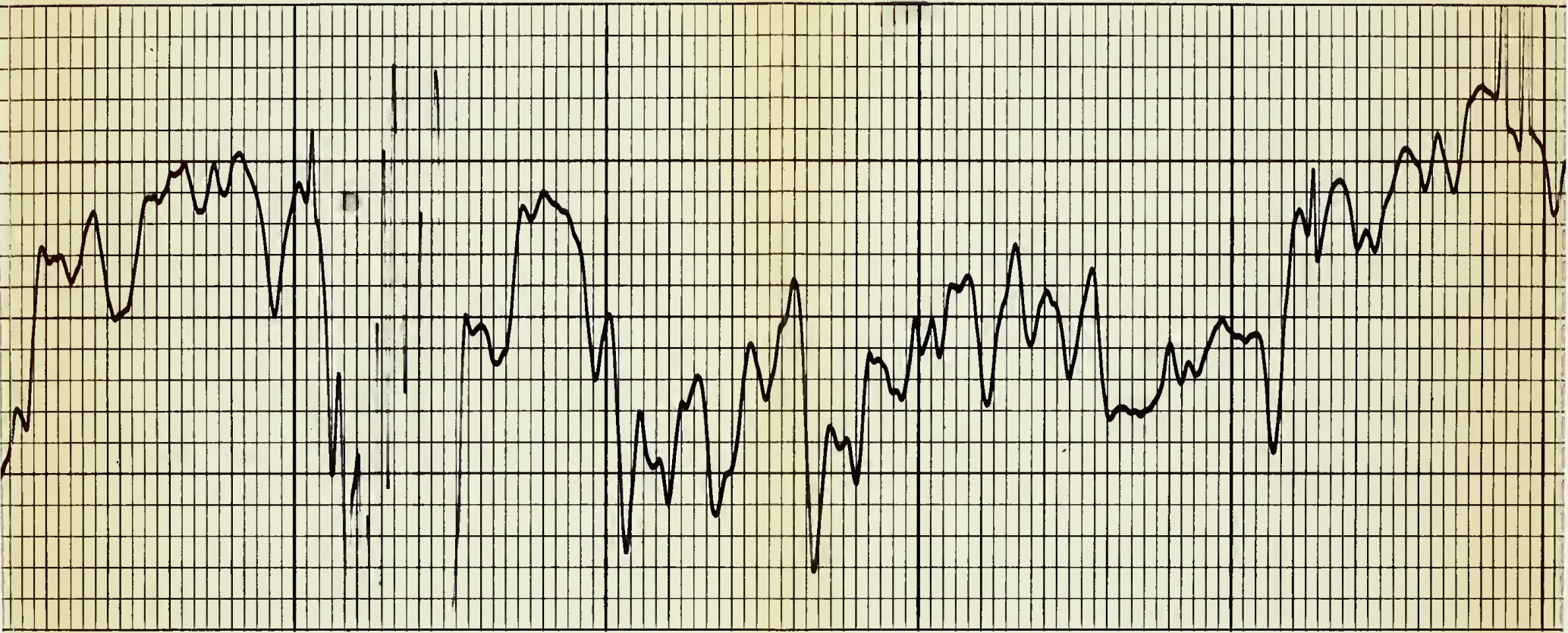


1400

1500

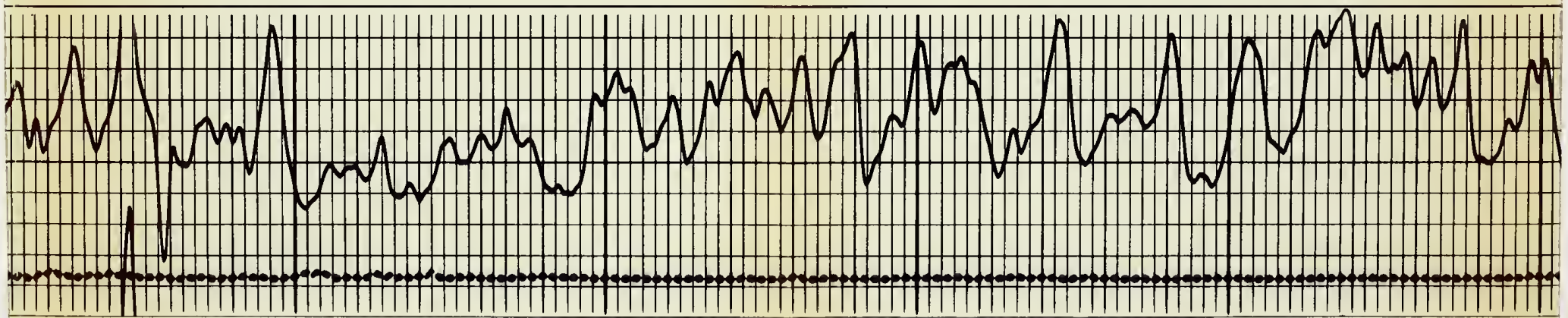
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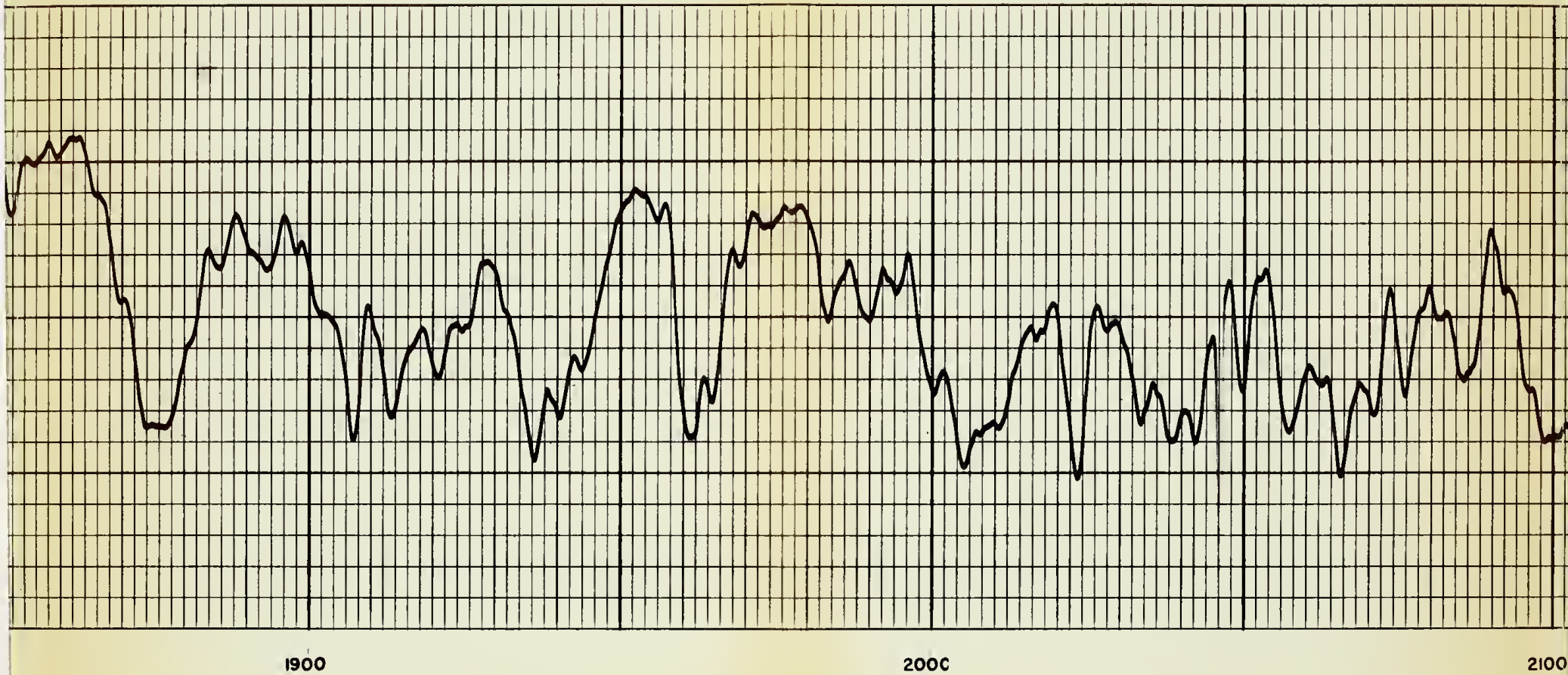


1700

1800





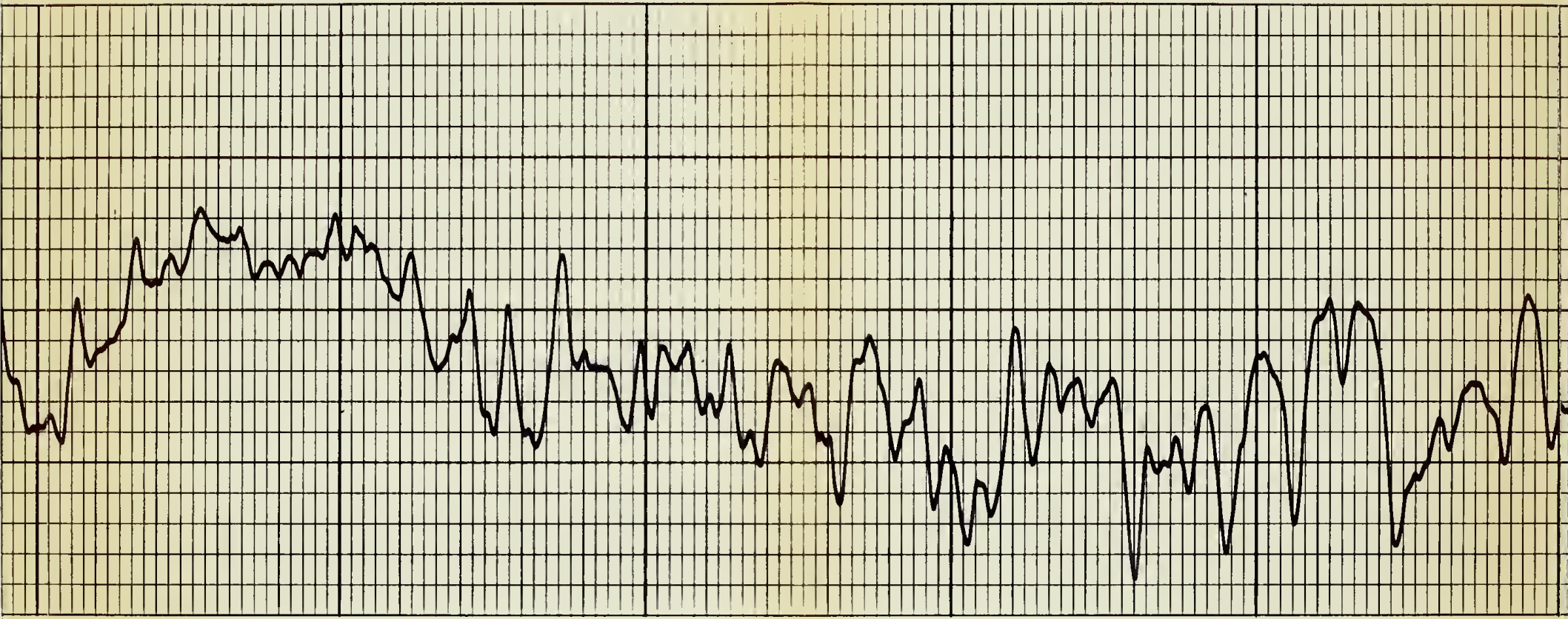


1900

2000

2100

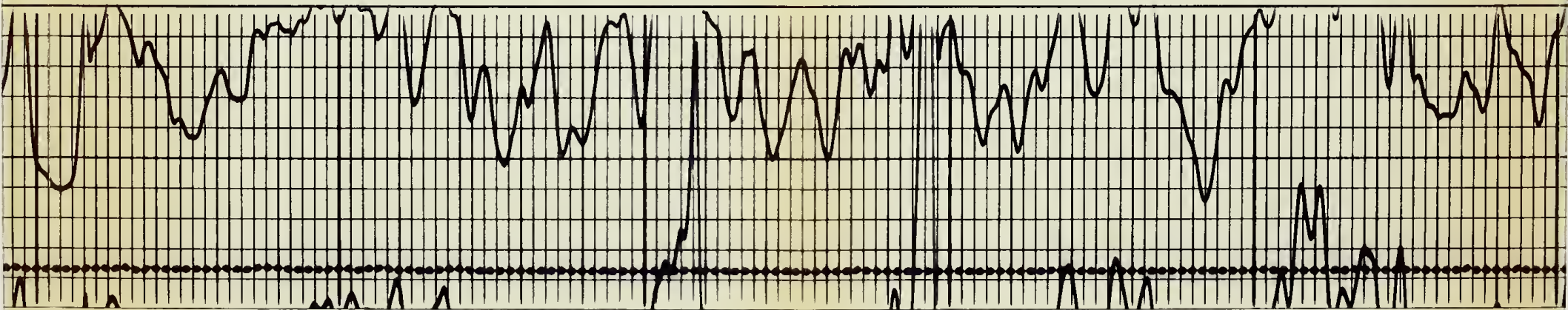




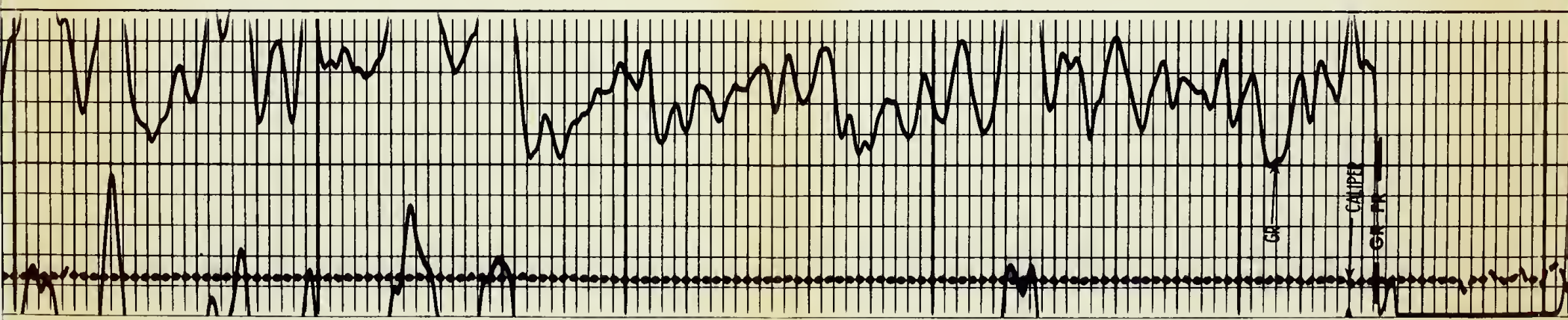
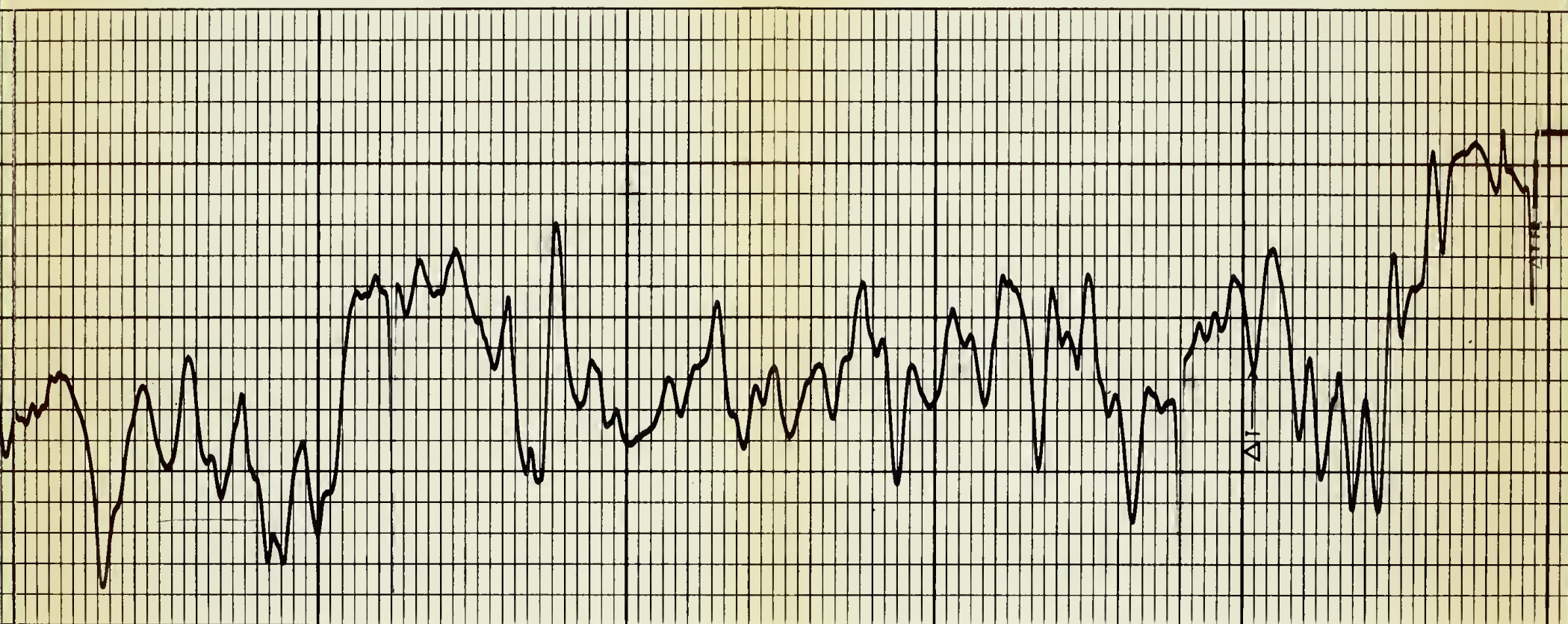
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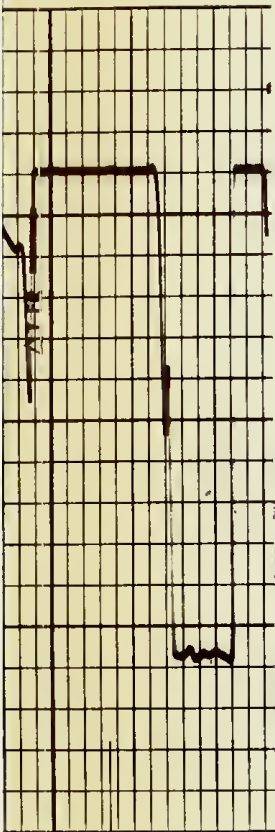
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2300

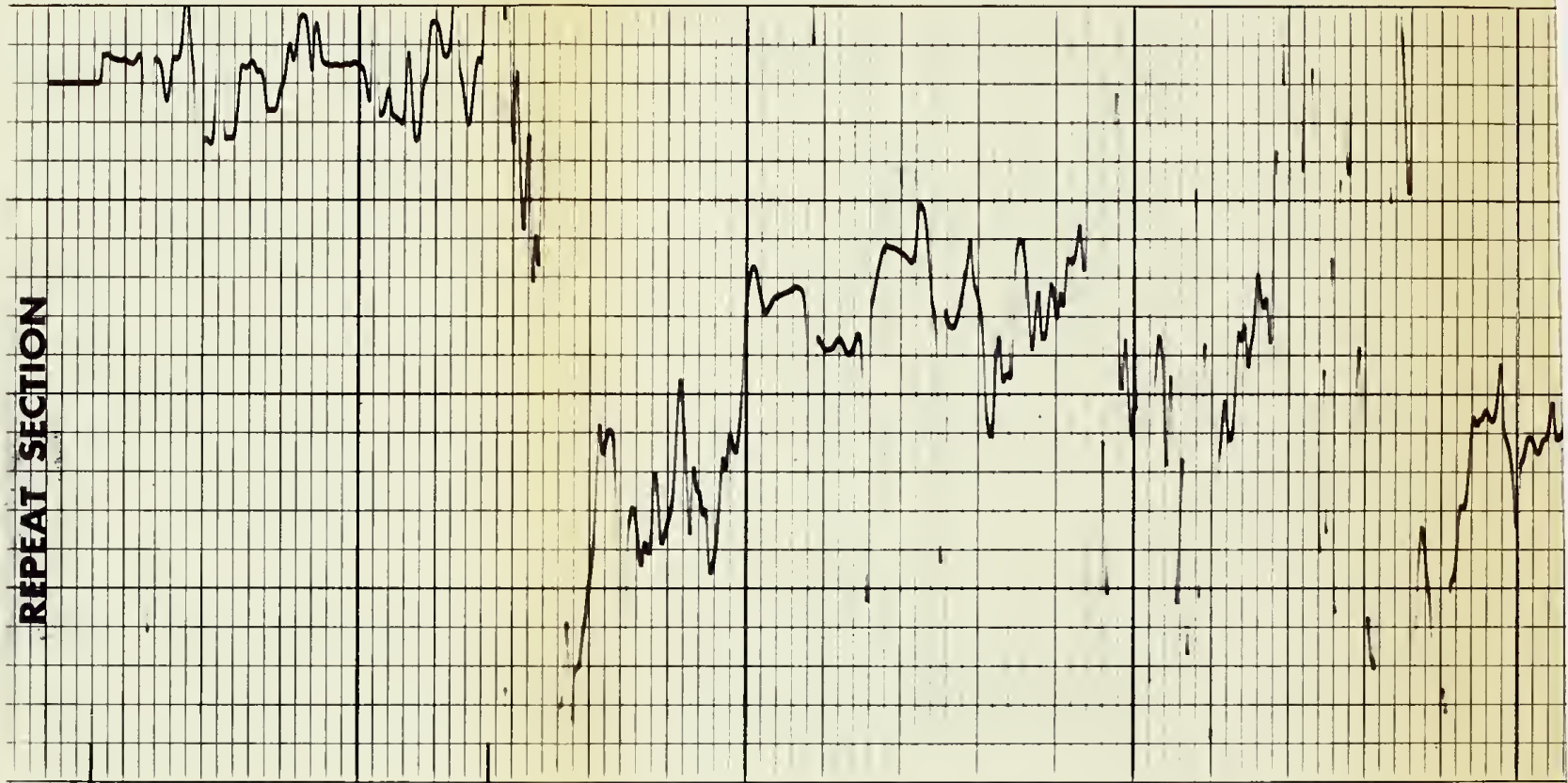




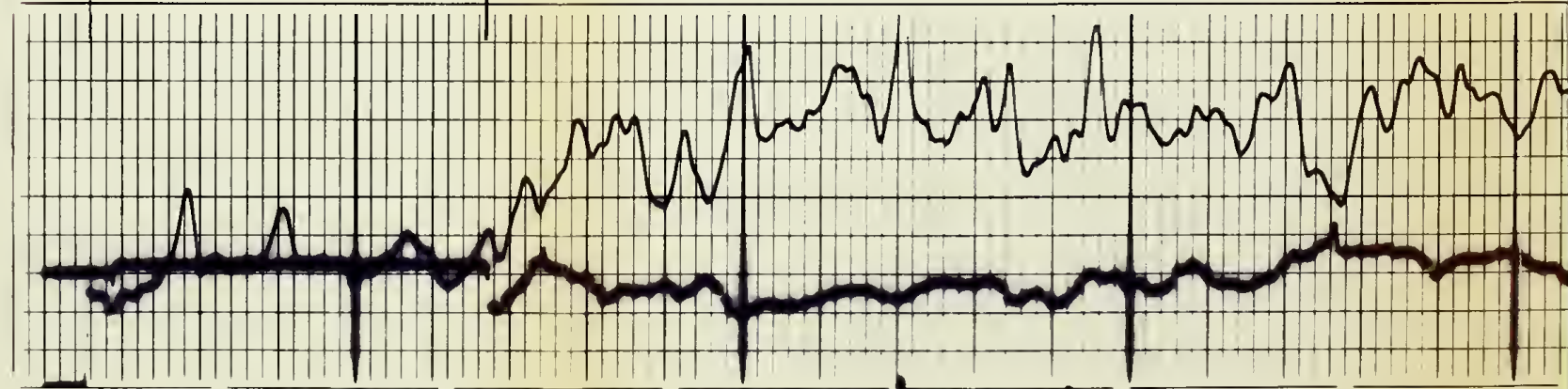




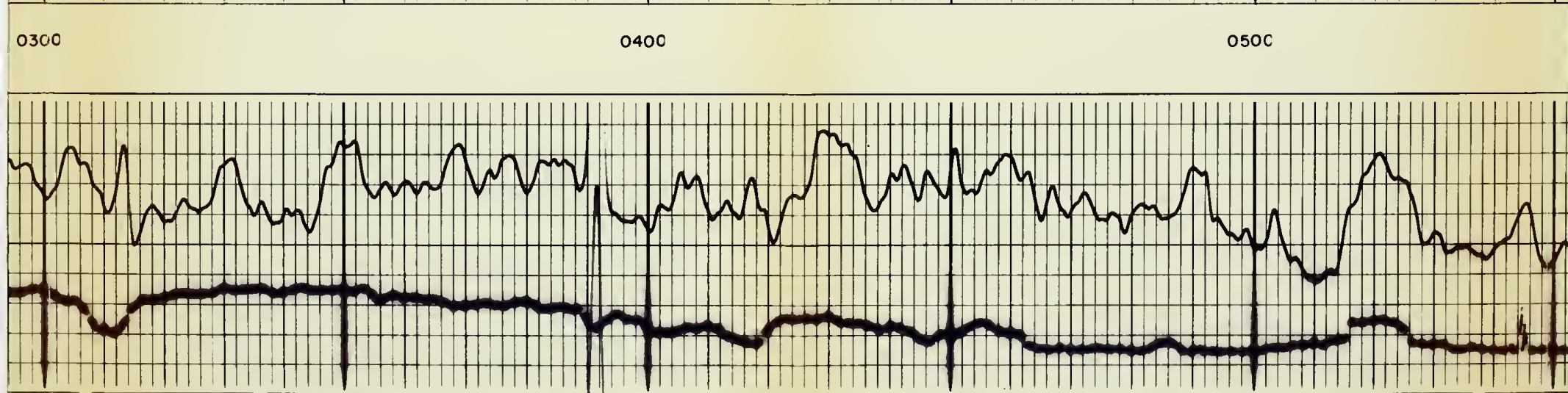
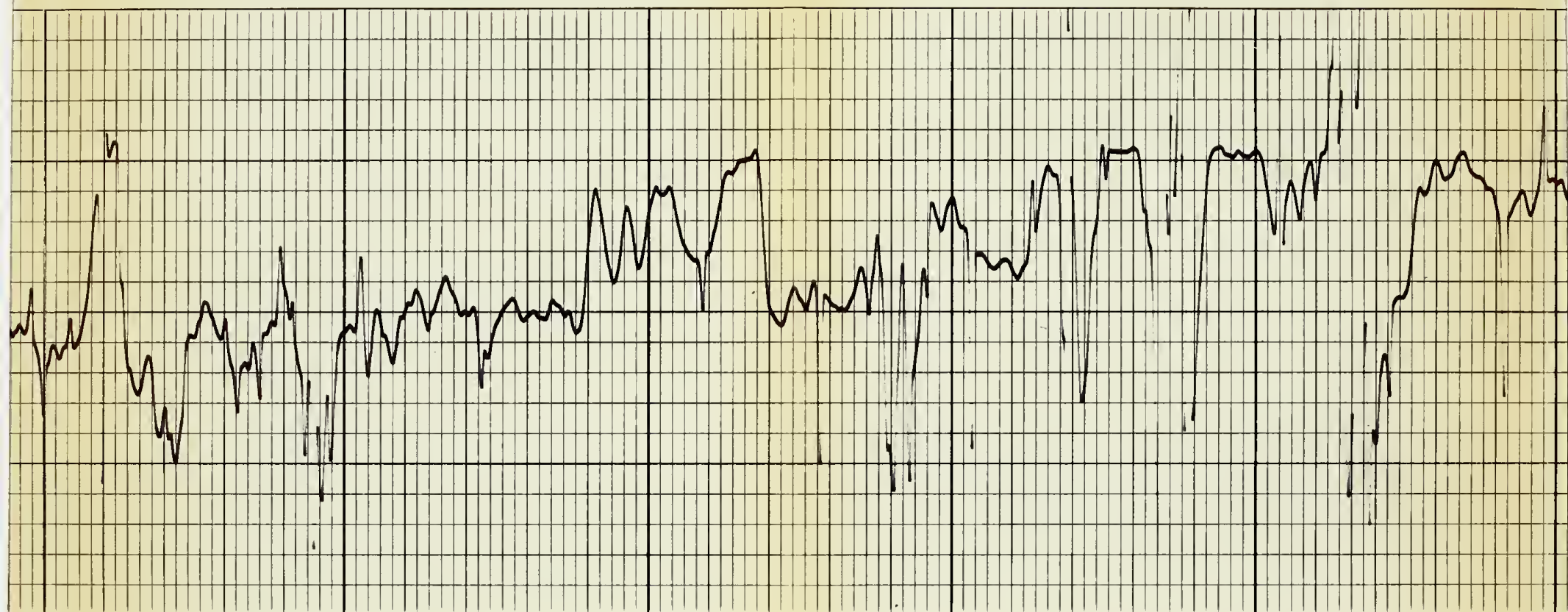
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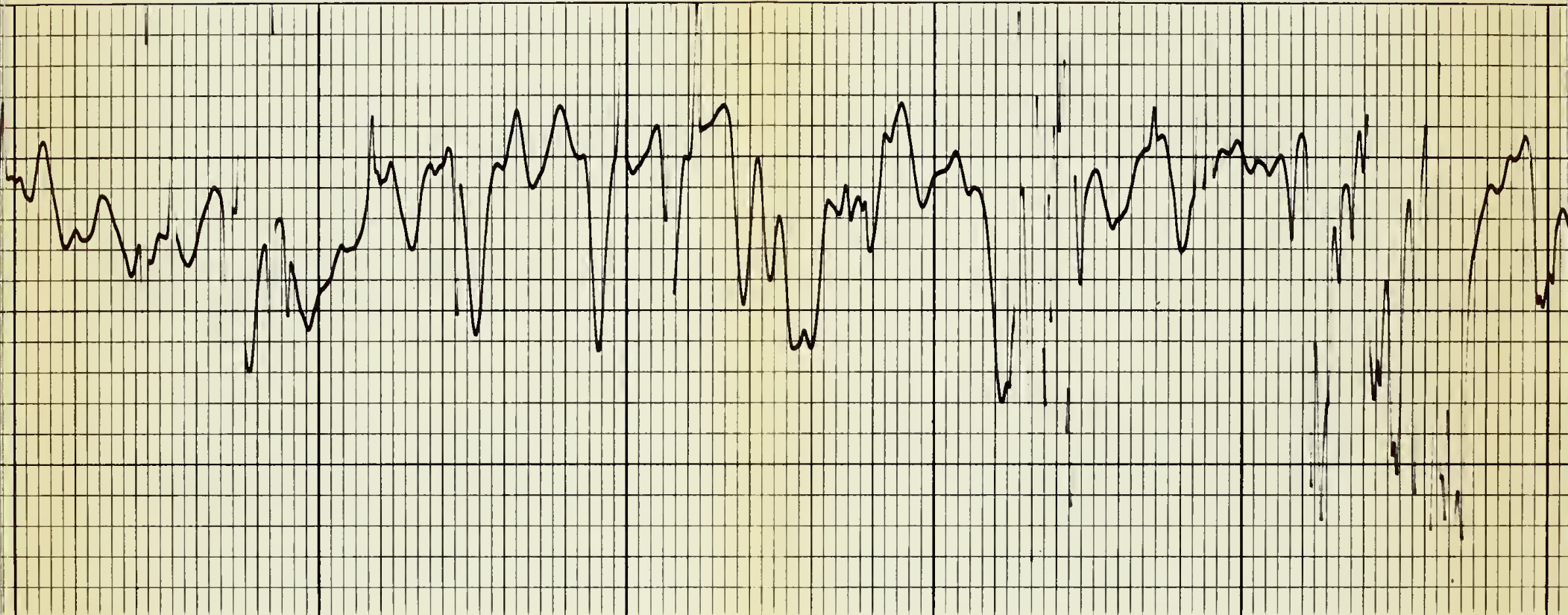


LR Casing 0200 0300





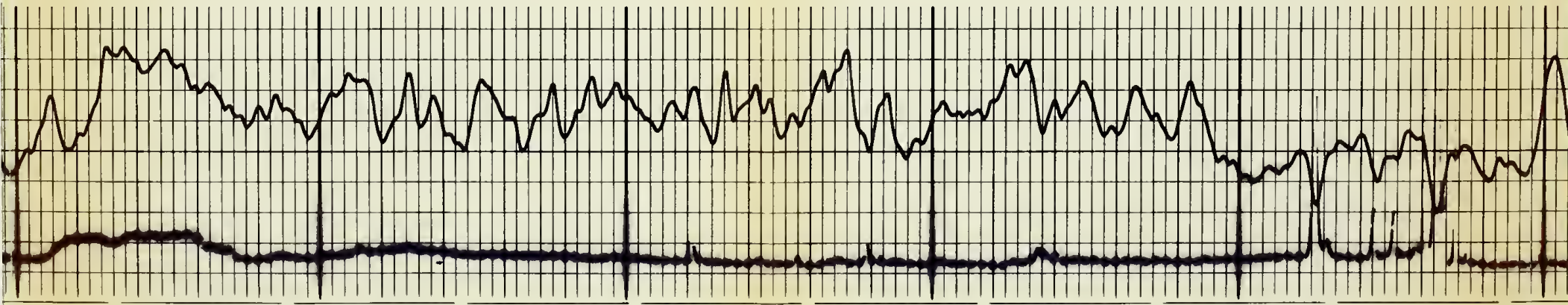




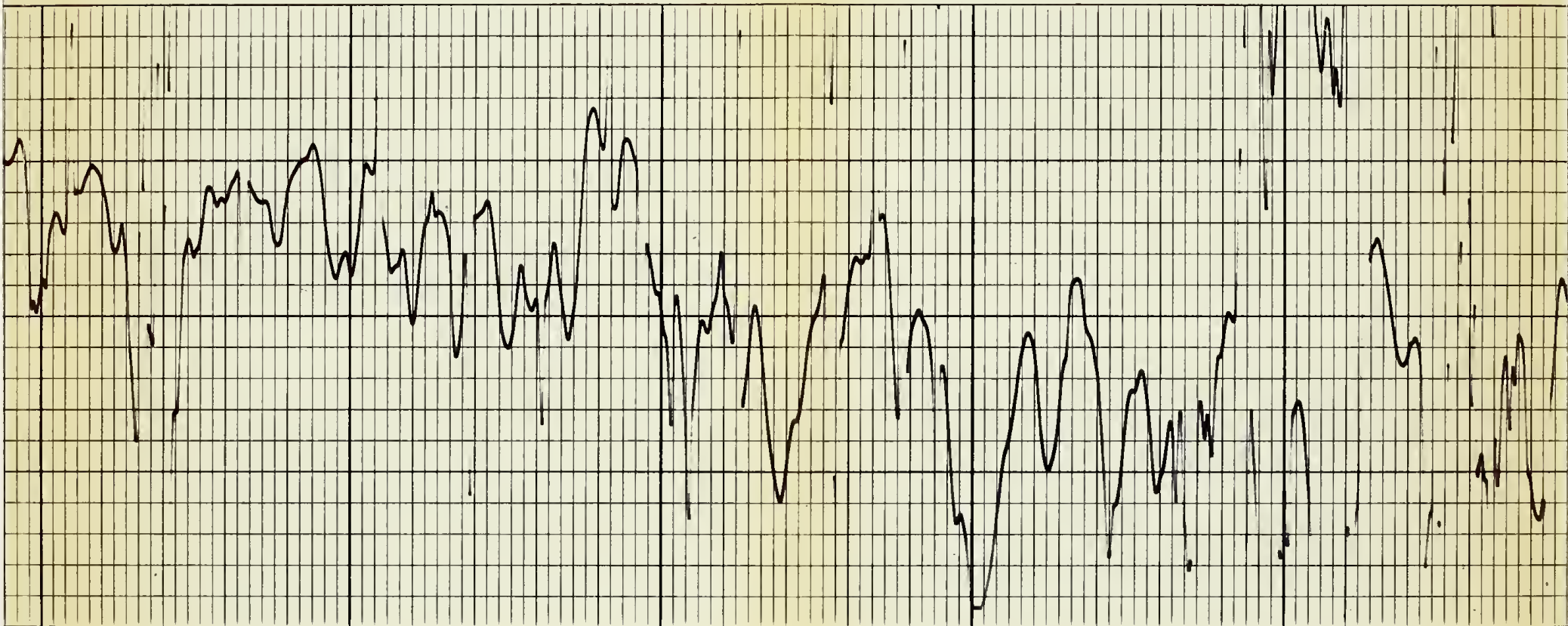
0600

0700

0800



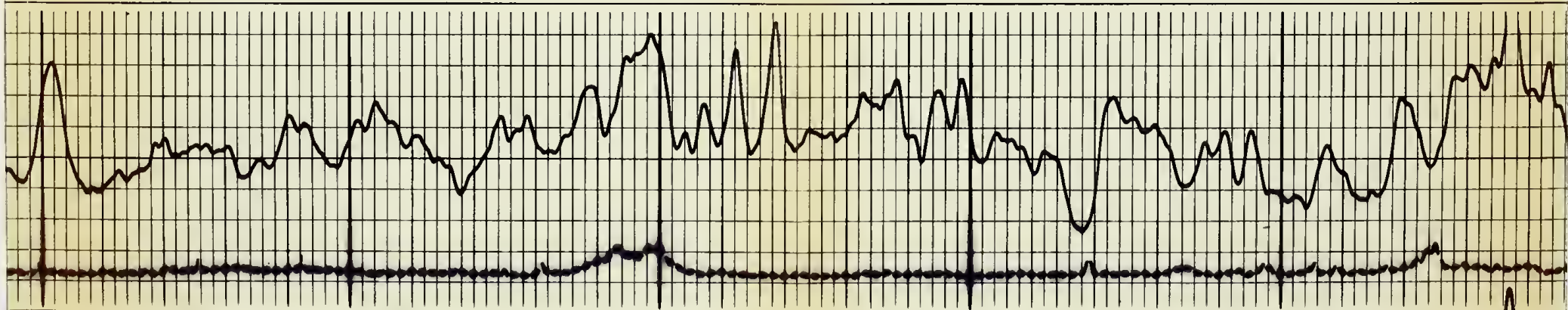


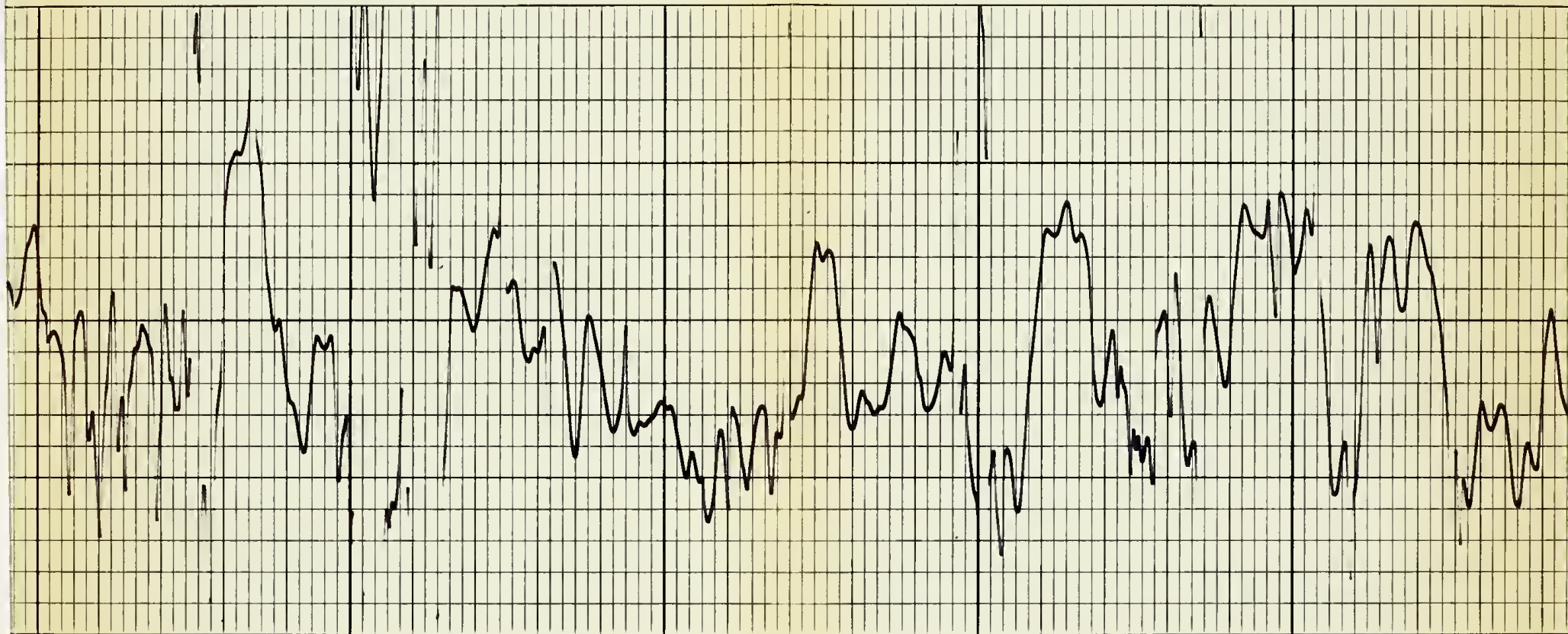


0800

0900

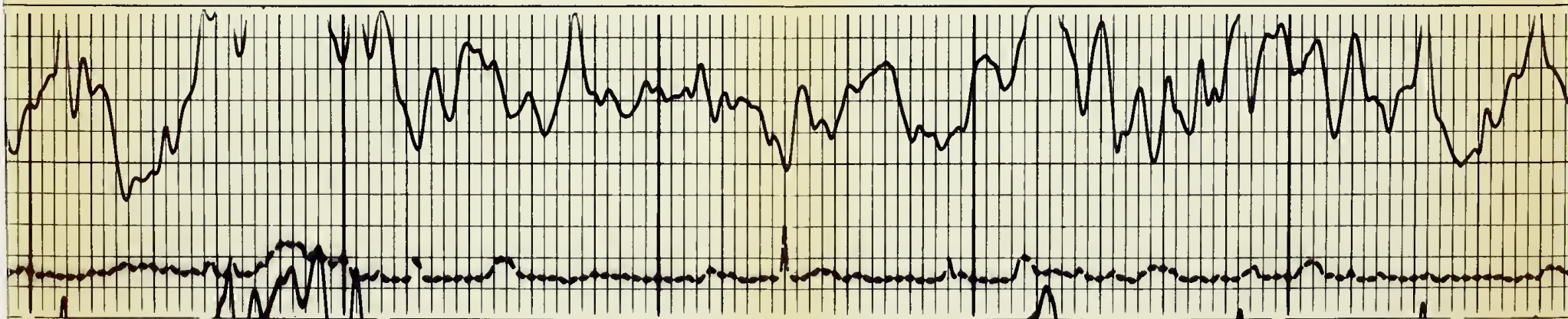
1000



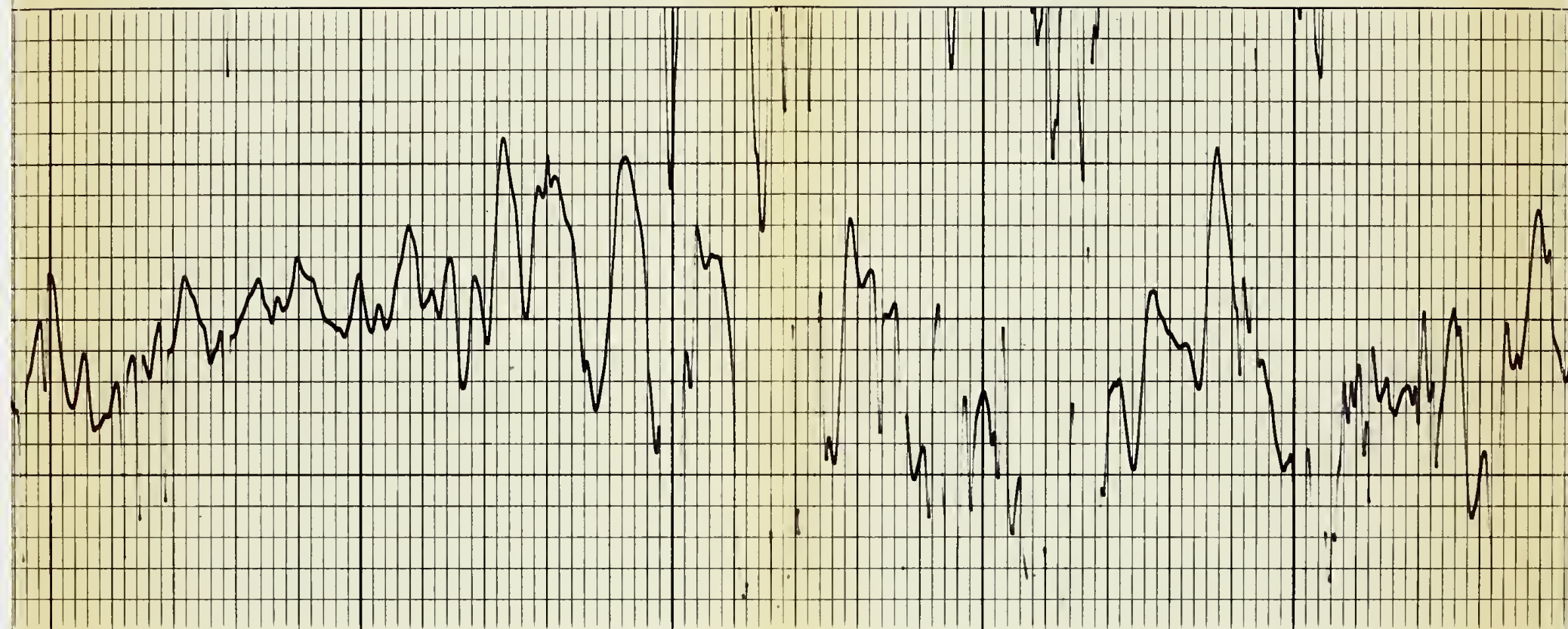


1100

1200



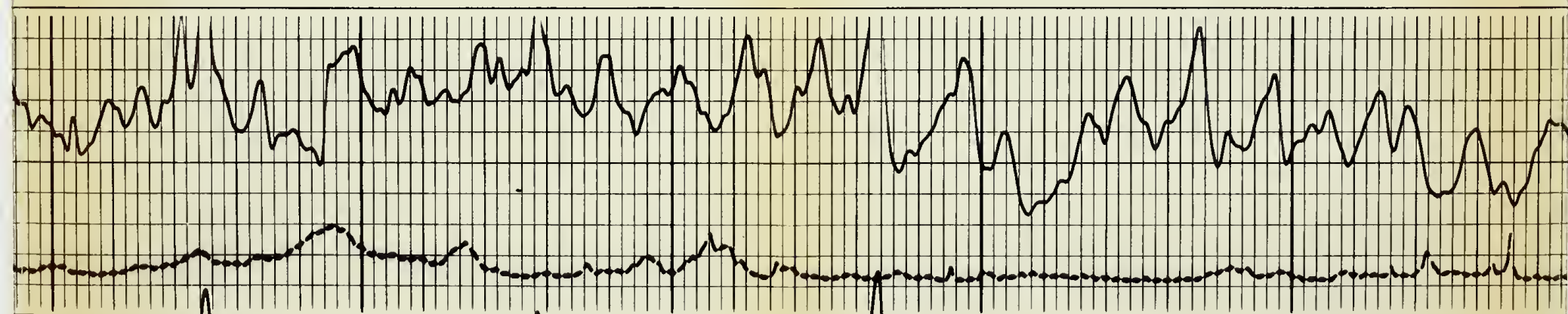


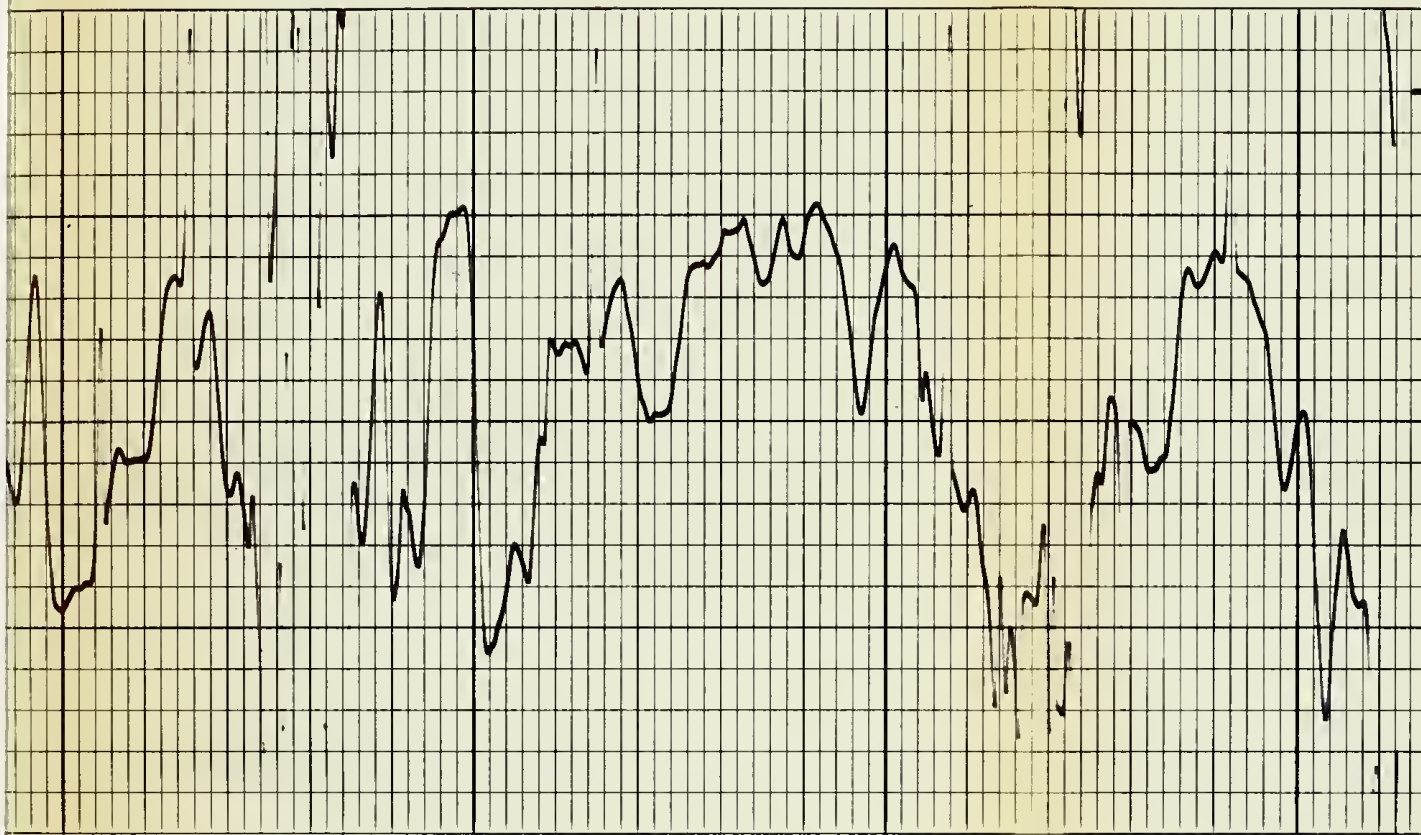


1300

1400

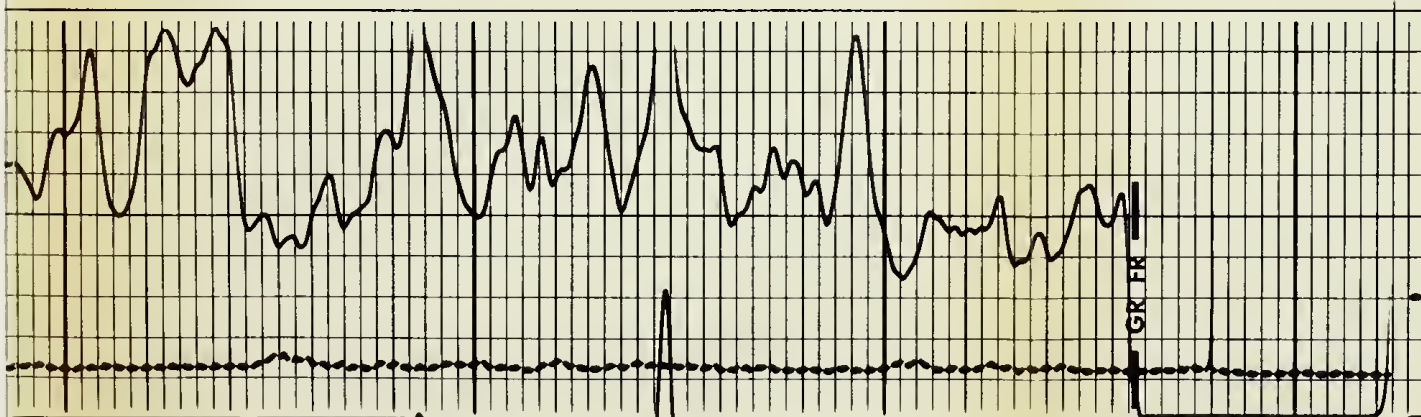
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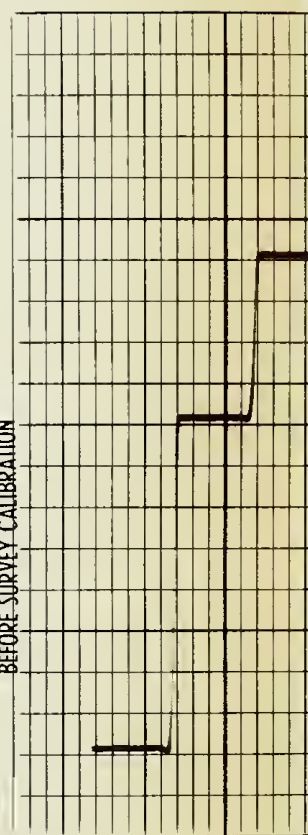
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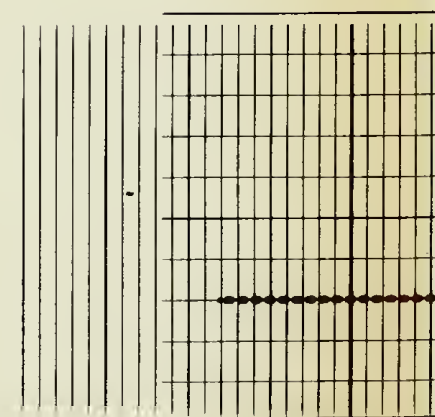


GR FR

BEFORE SURVEY CALIBRATION



2200

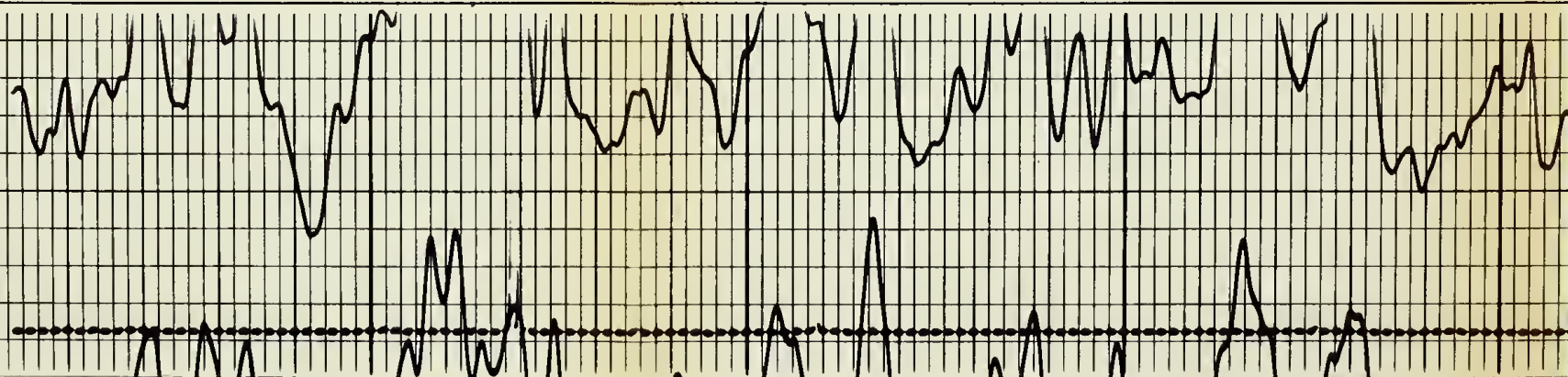


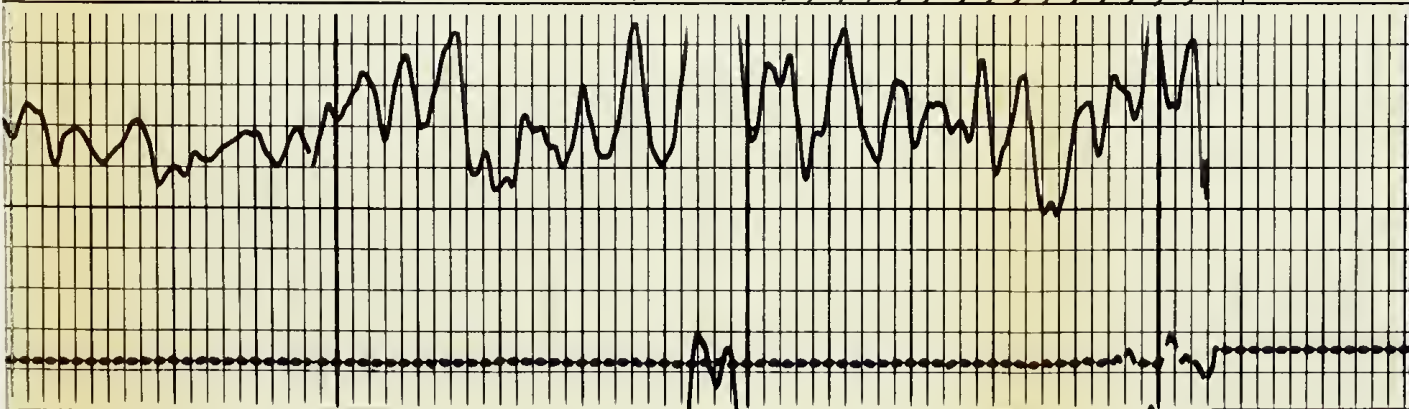


REPEAT SECTION

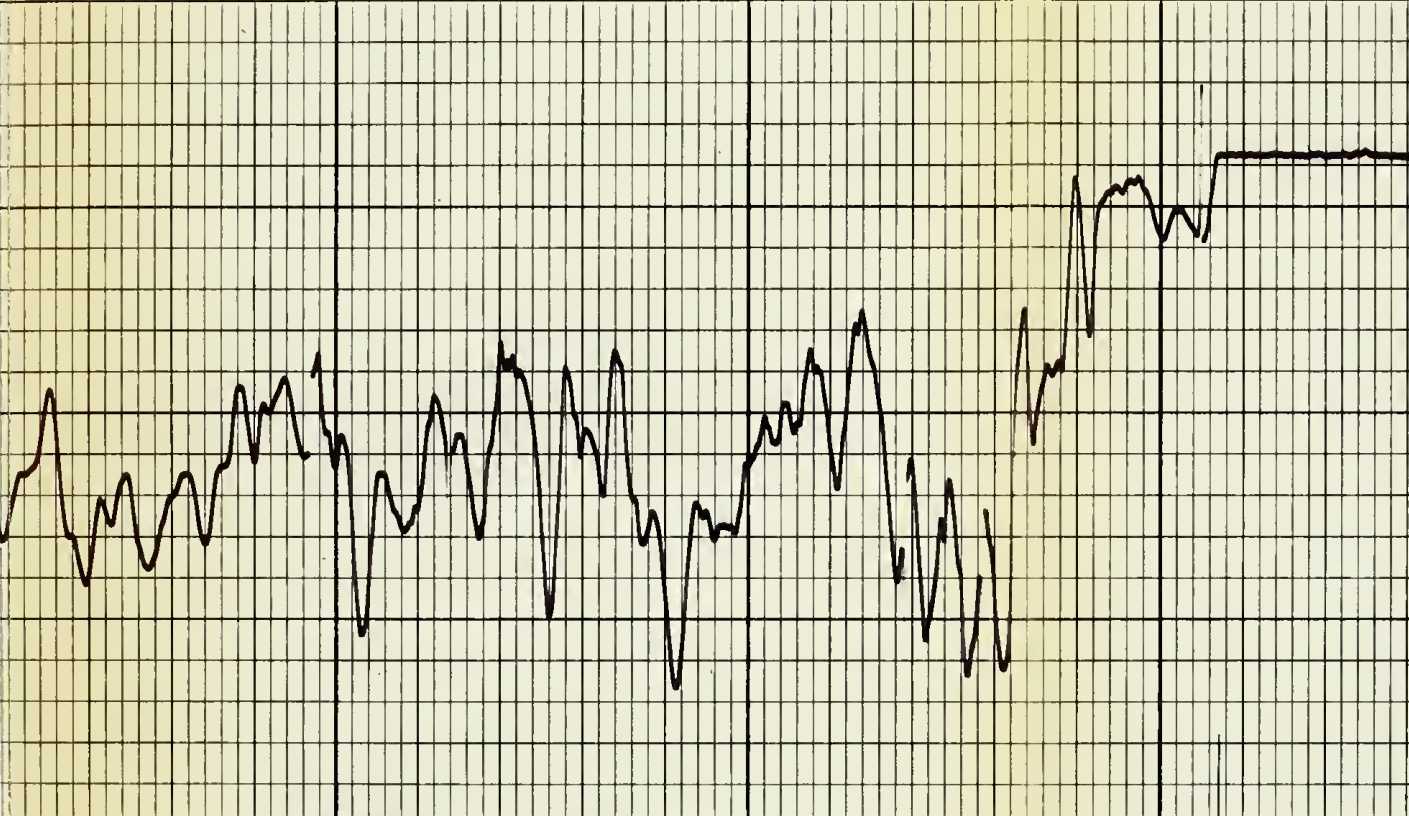
2300

2400





GAMMA RAY API UNITS  
0 150 300



CALIPER DIAM. IN INCHES  
CORRELATION ONLY 15

INTERVAL TRANSIT TIME MICROSECONDS PER FOOT T<sub>3</sub> R<sub>1</sub> 2 R<sub>2</sub>  
150 100 50  
200 150

2506 MEMORIZER OUT — CURVES INVALID 2600 M

COMPANY ATLANTIC RICHFIELD COMPANY  
WELL SORGHUM GULCH #8  
FIELD SORGHUM GULCH  
COUNTY RIO BLANCO STATE COLORADO

SCHL. FR 2607  
SCHL. TD 2610  
DRILR TD 2608  
Elev: KB ----  
DF 6542  
GL 6538

CALIBRATION RECORD

BEFORE SURVEY CALIBRATION OR CALIBRATION



BEFORE SURVEY CALIBRATION OR CALIBRATION

6

5

4

3

2

1

AFTER SURVEY CALIBRATION

5

4

3

2

1

### BOREHOLE COMPENSATED SONIC CALIBRATION CODING

1. MECHANICAL ZERO
2. 40  $\mu$  SEC/FT
3. 60  $\mu$  SEC/FT
4. 80  $\mu$  SEC/FT
5. 100  $\mu$  SEC/FT
6. 140  $\mu$  SEC/FT

### GAMMA RAY CALIBRATION CODING

1. MECHANICAL ZERO
2. ELECTRICAL ZERO
3. RECORDER SENSITIVITY
4. MEMORIZER ADJUSTMENT
5. BACKGROUND
6. CALIBRATION

## CALIBRATION RECORD

COMPANY ATLANTIC RICHFIELD COMPANY

WELL SORGHUM GULCH #8

FIELD SORGHUM GULCH

COUNTY RIO BLANCO STATE COLORADO

SCHL. FR 2607  
SCHL. TD 2610  
DRLR TD 2608  
Elev:

KB ----  
DF 6542  
GL 6538

Schlumberger

# LATEROLOG

WITH GAMMA RAY

COUNTY <u>RIO BLANCO</u> FIELD or LOCATION <u>SORGHUM GULCH</u> WELL <u>SORGHUM GULCH #8</u>	COMPANY <u>ATLANTIC RICHFIELD COMPANY</u>	
WELL <u>SORGHUM GULCH #8</u>	WELL <u>SORGHUM GULCH #8</u>	
FIELD <u>SORGHUM GULCH</u>	FIELD <u>SORGHUM GULCH</u>	
COUNTY <u>RIO BLANCO</u> STATE <u>COLORADO</u>	COUNTY <u>RIO BLANCO</u> STATE <u>COLORADO</u>	
LOCATION PERMIT #28182 2600' FWL & 2301' FSL	Other Services: BHC-GR FDC-GR HRT AMP-VDL	
Sec. <u>3</u> Twp. <u>35S</u> Rge. <u>96W</u>	Sec. <u>3</u> Twp. <u>35S</u> Rge. <u>96W</u>	
Permanent Dotum: <u>GL</u> , Elev. <u>6538</u>	Elev.: K.B. <u>----</u>	
Log Measured From <u>GL</u> , <u>0</u> Ft. Above Perm. Dotum	D.F. <u>6542</u>	
Drilling Measured From <u>GL</u>	G.L. <u>6538</u>	
Date <u>11-28-74</u>	Date <u>11-28-74</u>	
Run No. <u>ONE</u>	Run No. <u>ONE</u>	
Depth—Driller <u>2608</u>	Depth—Driller <u>2608</u>	
Depth—Logger <u>2614</u>	Depth—Logger <u>2614</u>	
Btm. Log Interval <u>2610</u>	Btm. Log Interval <u>2610</u>	
Top Log Interval <u>176</u>	Top Log Interval <u>176</u>	
Coring—Driller <u>8 5/8 @ 176</u>	@	@
Coring—Logger <u>176</u>	@	@
Bit Size <u>6-1/4</u>	Bit Size <u>6-1/4</u>	
Type Fluid in Hole <u>WATER</u>	Type Fluid in Hole <u>WATER</u>	
Dens. <u>    </u> Visc. <u>    </u>	Dens. <u>    </u> Visc. <u>    </u>	
pH <u>    </u> Fluid Loss <u>    </u> ml <u>    </u>	ml <u>    </u>	ml <u>    </u>
Source of Sample <u>MUD PIT</u>	Source of Sample <u>MUD PIT</u>	
R <sub>m</sub> @ Meas. Temp. <u>3.79 @ 68</u> °F	@ °F	@ °F
R <sub>mf</sub> @ Meas. Temp. <u>CLEAR</u> °F	@ °F	@ °F
R <sub>mc</sub> @ Meas. Temp. <u>WATER</u> °F	@ °F	@ °F
Source: R <sub>mf</sub> R <sub>mc</sub> <u>AIR DRILLED</u>	Source: R <sub>mf</sub> R <sub>mc</sub> <u>AIR DRILLED</u>	
R <sub>m</sub> @ BHT <u>2.05 @ 126</u> °F	@ °F	@ °F
Time Since Circ. <u>1700 HOURS</u>	Time Since Circ. <u>1700 HOURS</u>	
Mox. Rec. Temp. <u>126</u> °F	°F	°F
Equip. Location <u>7674 VRNL</u>	Equip. Location <u>7674 VRNL</u>	
Recorded By <u>DALTON-ETTER</u>	Recorded By <u>DALTON-ETTER</u>	
Witnessed By <u>BURNS-TAIT</u>	Witnessed By <u>BURNS-TAIT</u>	

The well name, location and borehole reference data were furnished by the customer.

FOLD HERE

REMARKS SERVICE ORDER NO. 28182

Changes in Mud Type or Additional Samples		Scale Changes			
Date	Sample No.	Type Log	Depth	Scale Up Hole	Scale Down Hole
Depth—Driller					
Type Fluid in Hole					
Dens.	Visc.				
pH	Fluid Loss				
Source of Sample					
R <sub>m</sub> @ Meas. Temp.	°F	@	°F	Run No.	Tool Type
R <sub>mf</sub> @ Meas. Temp.	°F	@	°F	Pod Type	Tool Pos.
R <sub>mc</sub> @ Meas. Temp.	°F	@	°F	Other	
Source: R <sub>mf</sub> R <sub>mc</sub>					
R <sub>m</sub> @ BHT	°F	@	°F		
R <sub>mf</sub> @ BHT	°F	@	°F		
R <sub>mc</sub> @ BHT	°F	@	°F		

Equip. Used: CART. No.

PANEL No. FFU-G 762, LLP-D 790E, BEL-A 264, PCG-B 107

SONDE No. LLS-K 798

Spicing: BEAM WIDTH:

REMARKS: 11-7 APPEARS ON SECOND GLANCE TO BE @ 3 1/2' OFF DEPTH TO GR-BHC-FDC LOGS. LOOKED ON DEPTH AT FIRST OVER-LAY BY ENGINEER. ---GLOBS OF OIL & TAR IN HOLE AND ON TOOLS WELL PRODUCING WATER. ---SP. TRACED AS SP. COULD NOT BE RUN WITH 11-7 AT SAME TIME AS SP. WAS TOO NOISY. SP. FILM HELD BY ENGINEER (DALTON). ---TIME MARKER BOX BLEW CIRCUIT BREAKER. SO NO SPEED INDICATOR. ---LOG RUN 4000' / HR BY WORD OF DALTON & ETTER.

SPONTANEOUS POTENTIAL  
millivolts

Depths

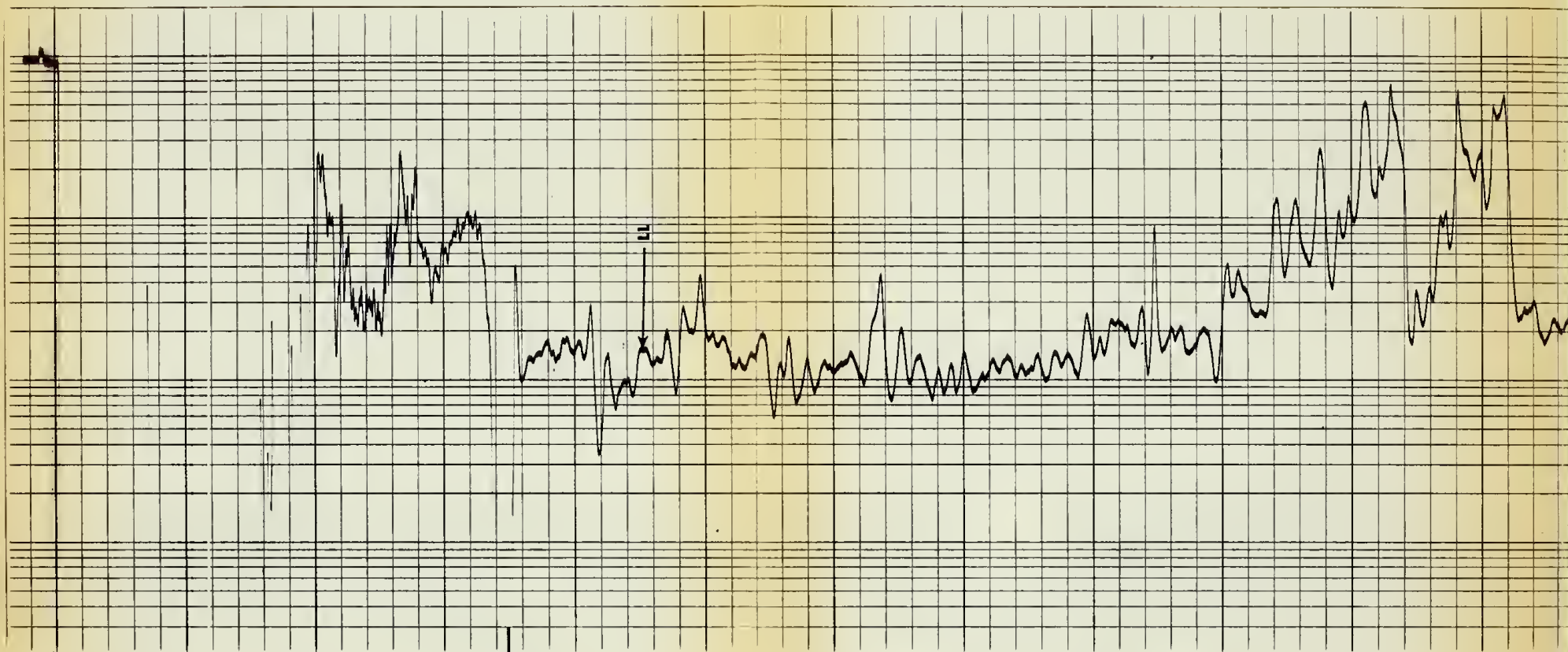
RESISTIVITY  
ohms. m<sup>2</sup>/m

LATEROLOG

- 20 -

1000020000





0000

0100

0200

0300

0400

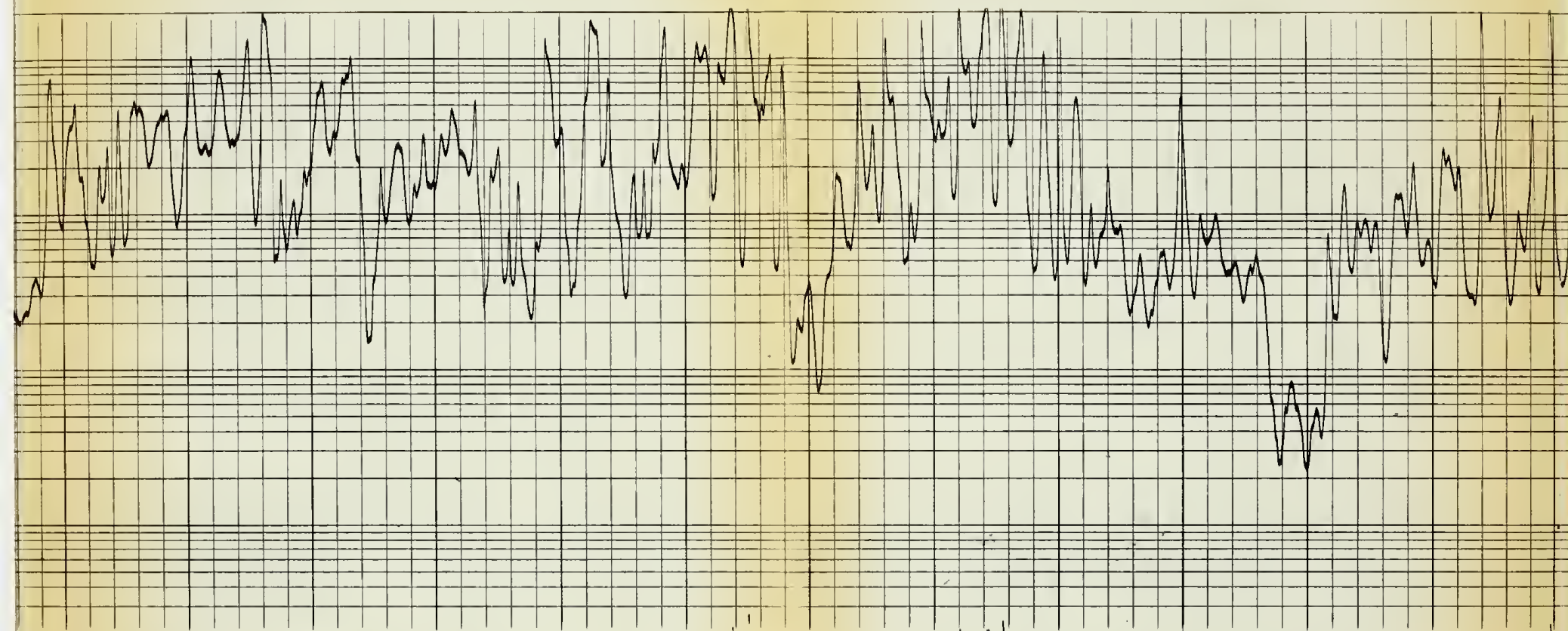
0500

Casing

UL

SP

+  
3  
2  
1



0600

0700

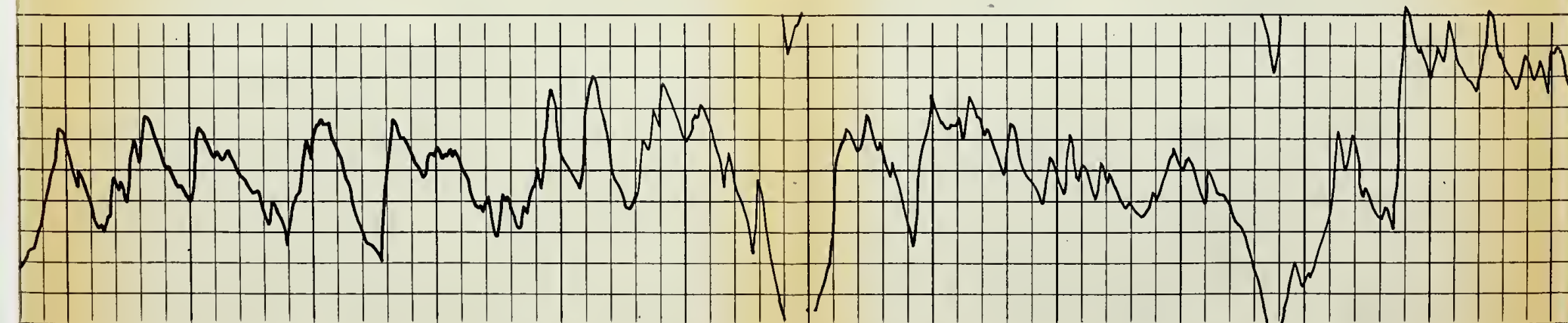
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0900

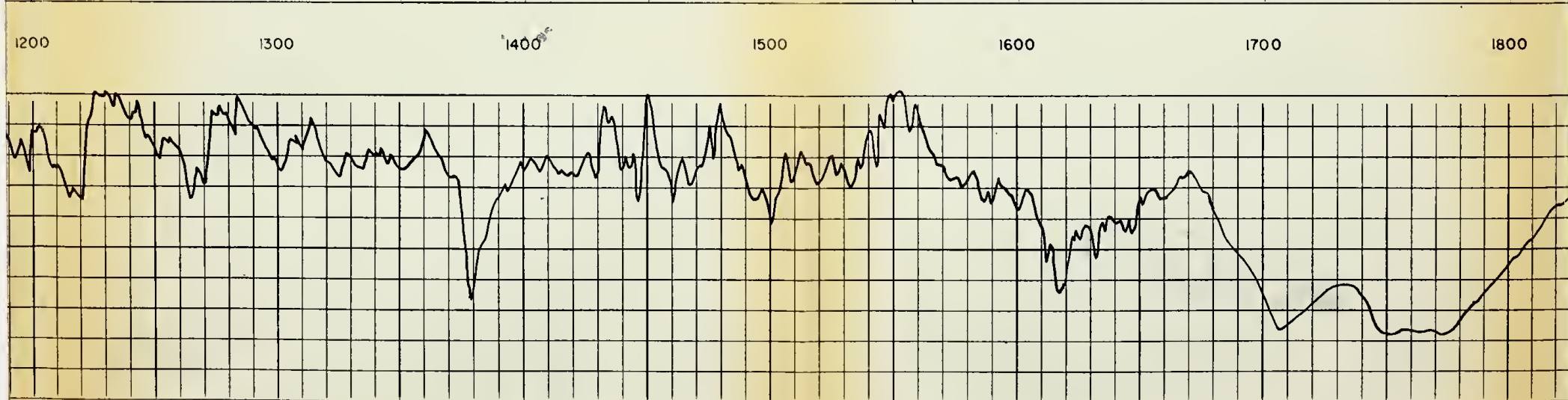
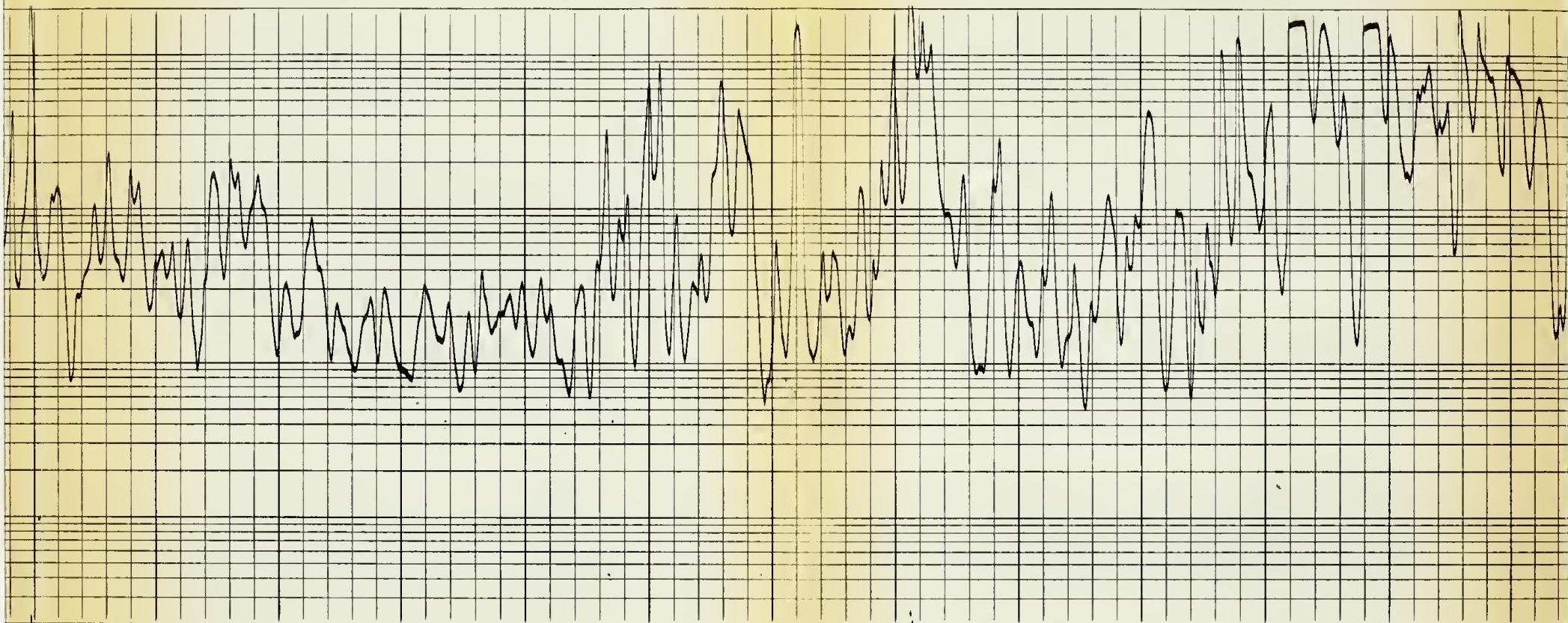
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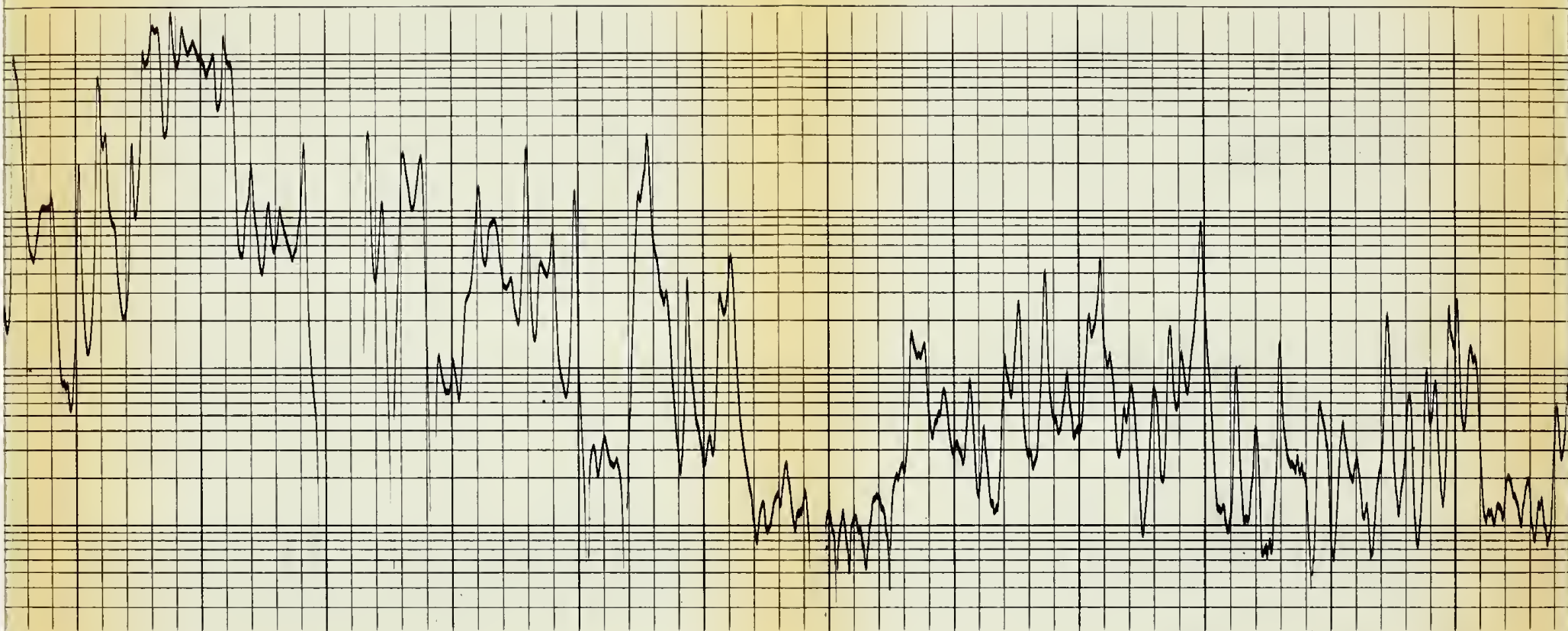
1100

1200









1900

2000

2100

2200

2300

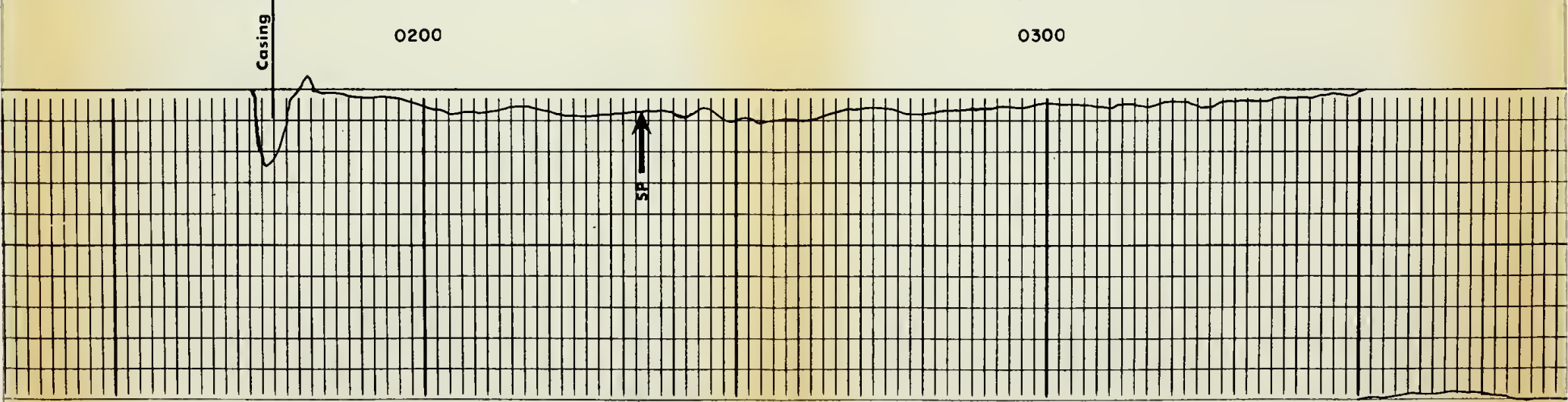
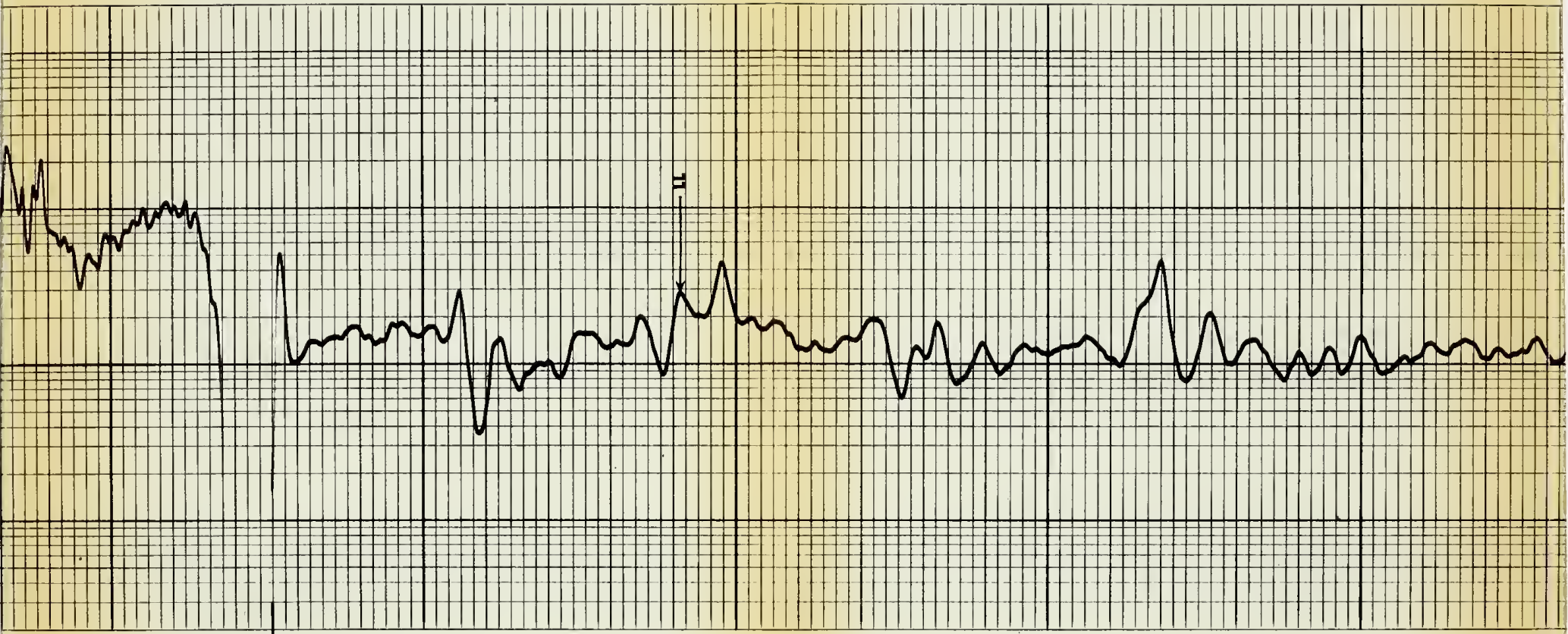
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73





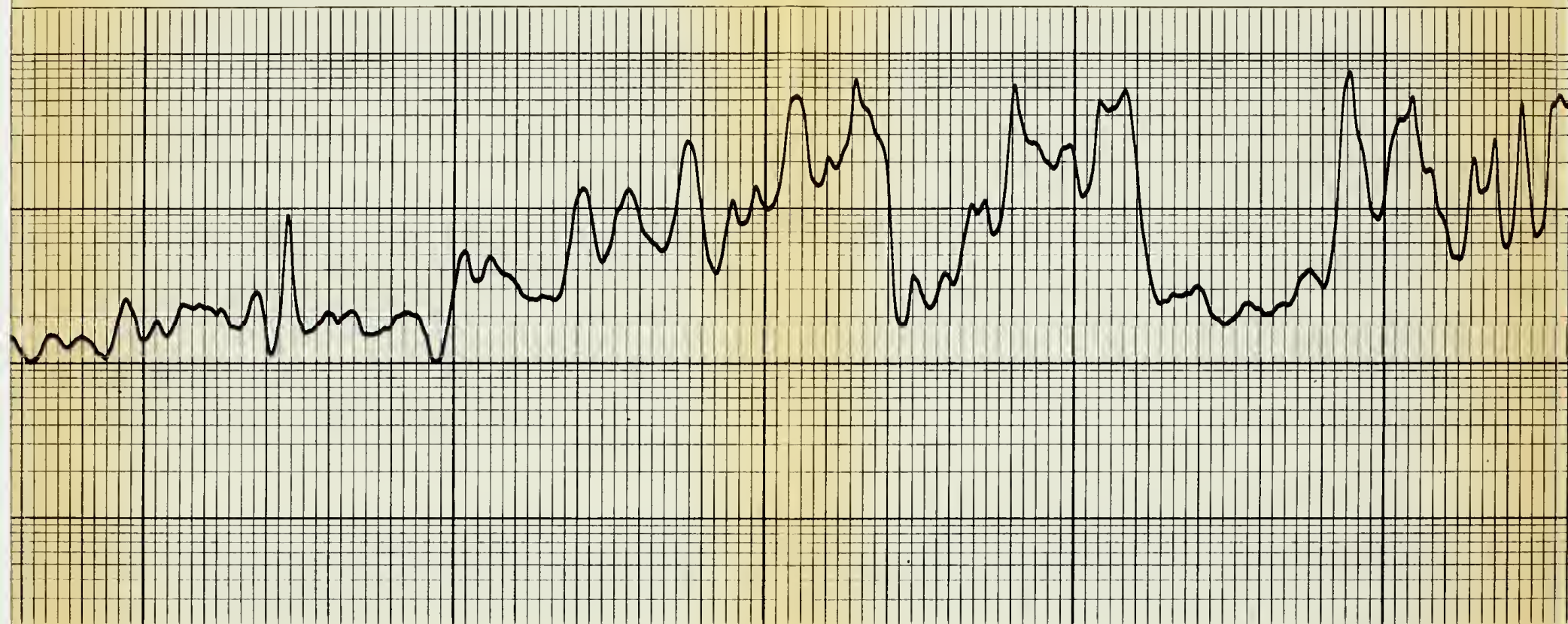


Casing

0200

0300

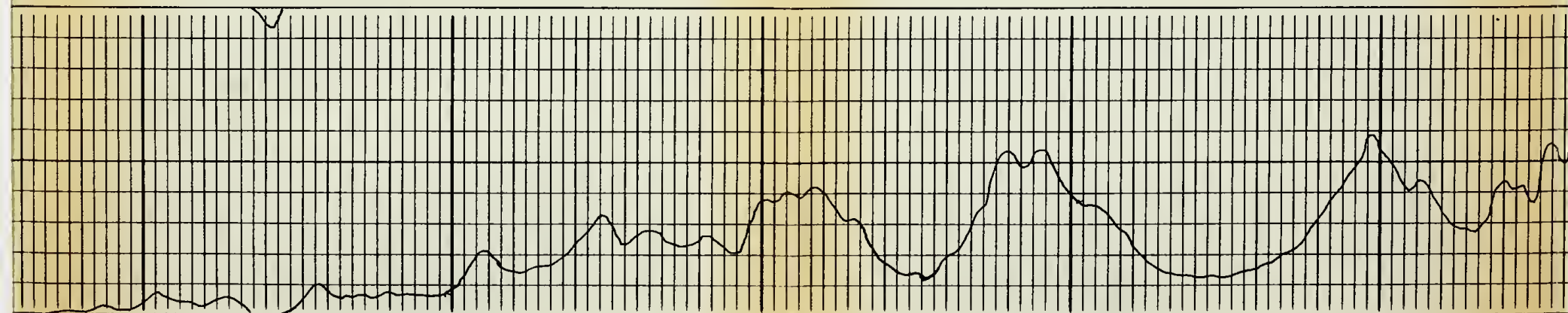


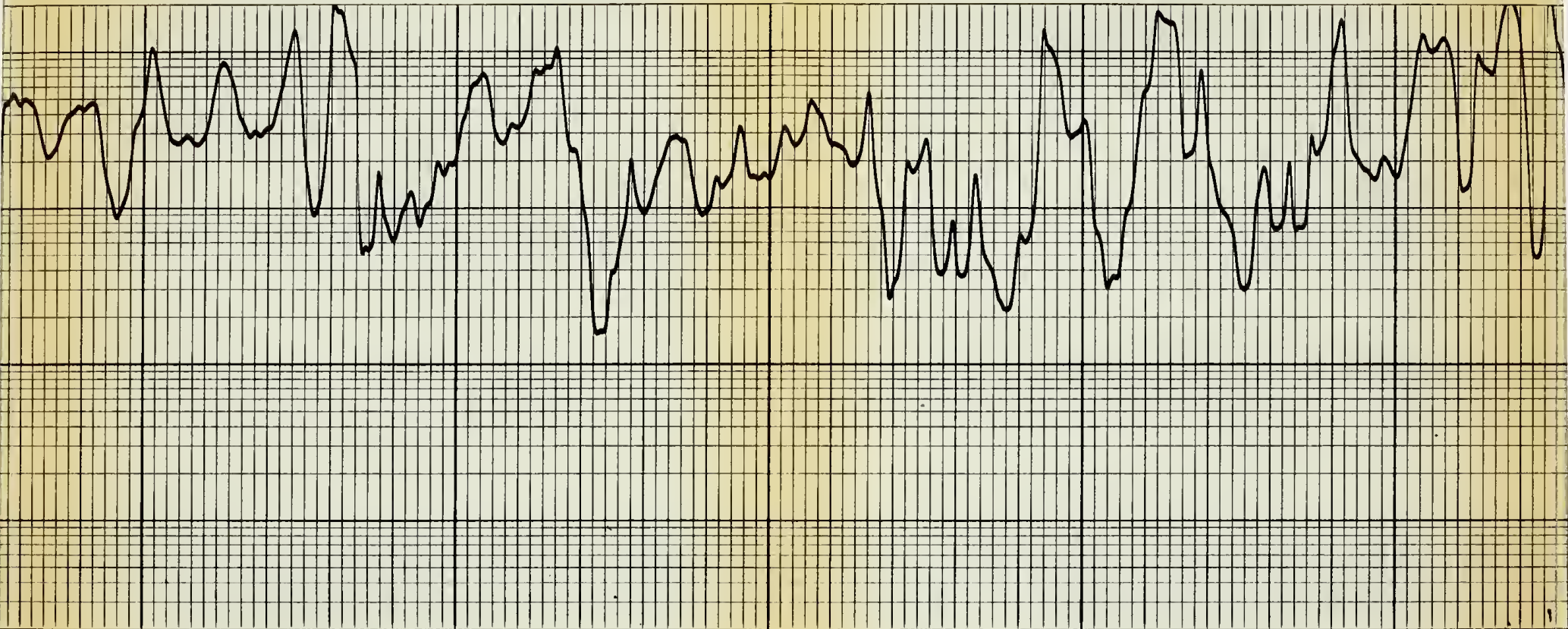


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0500

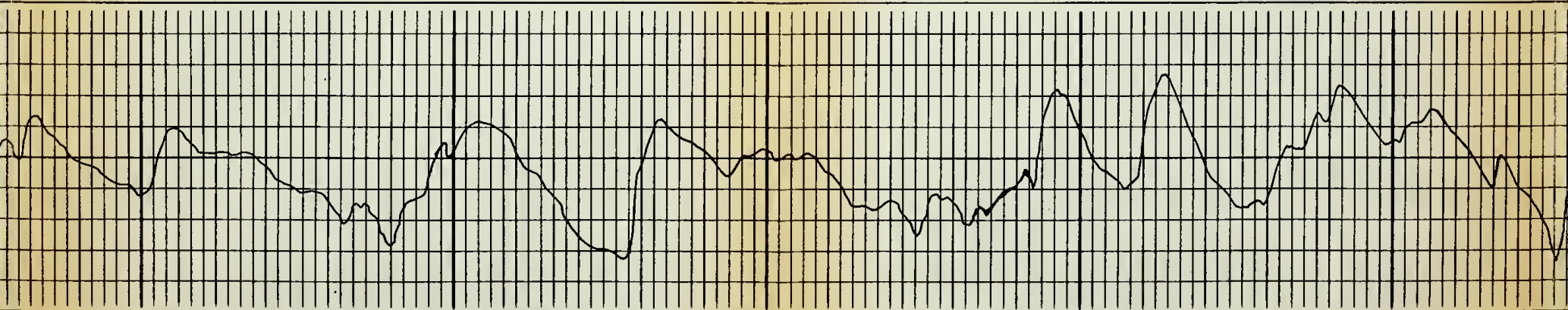
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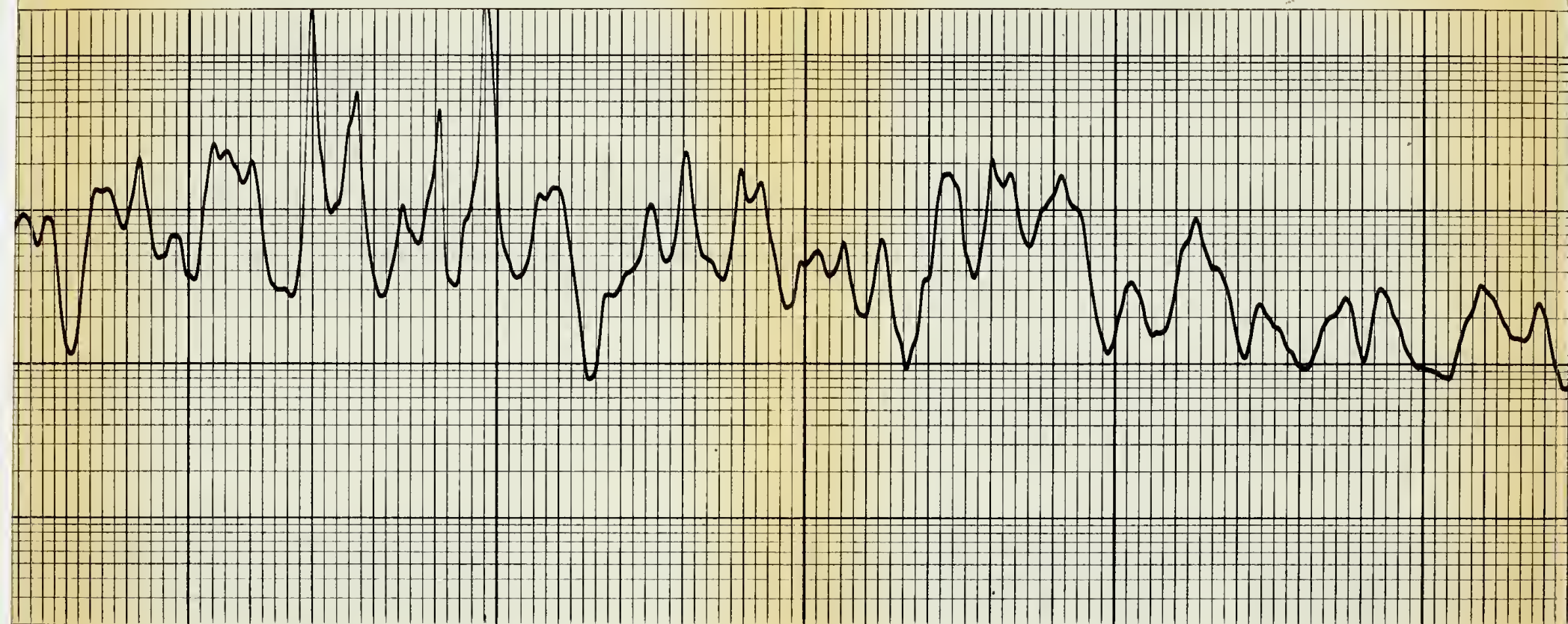
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0800



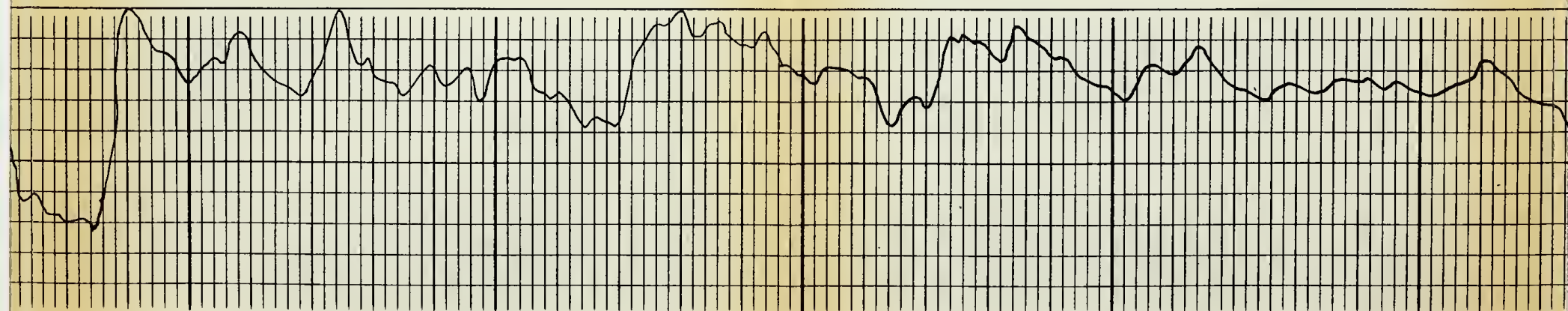




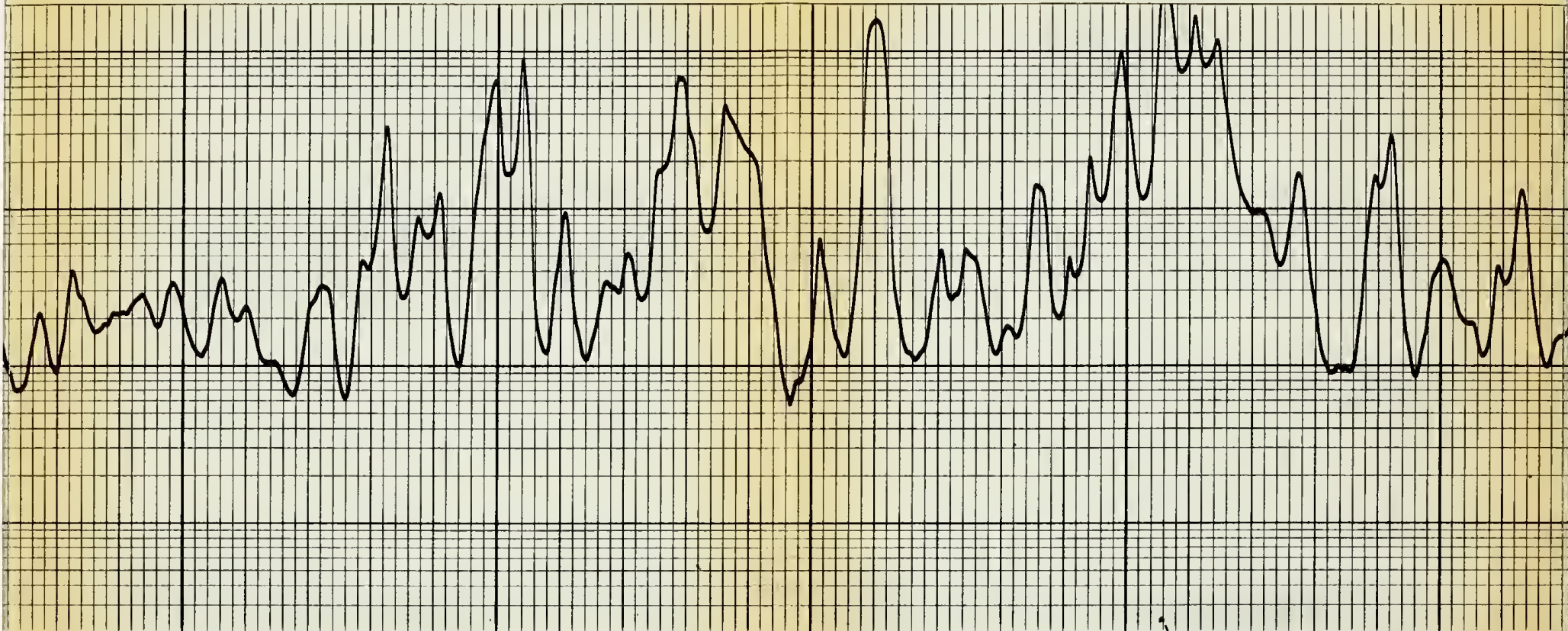


1200

1300



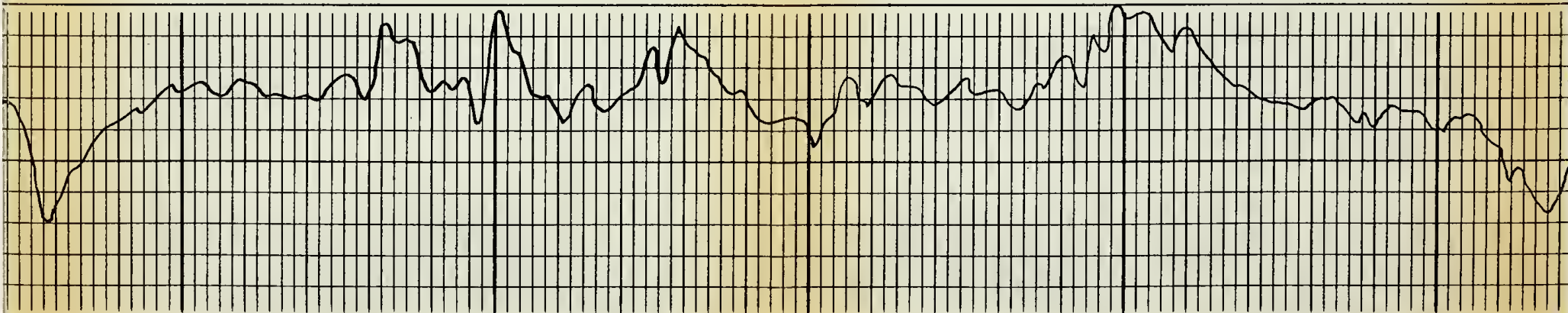


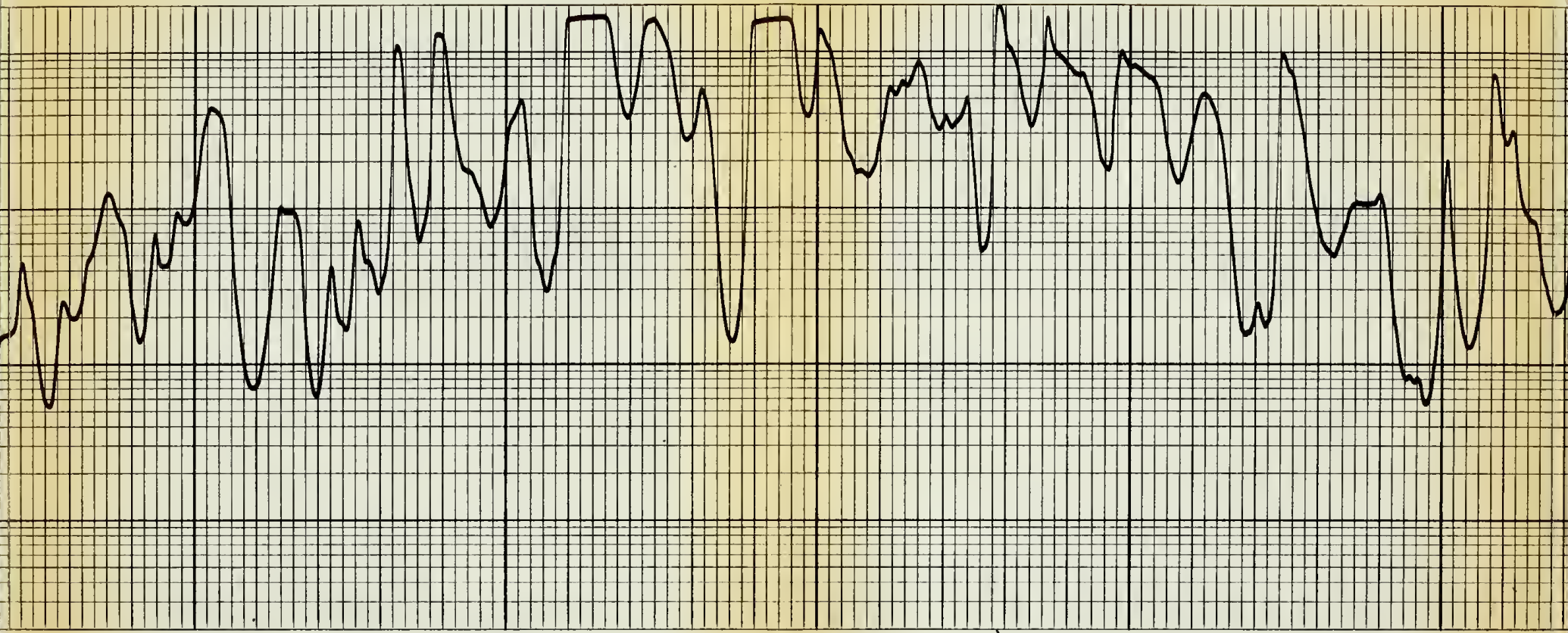


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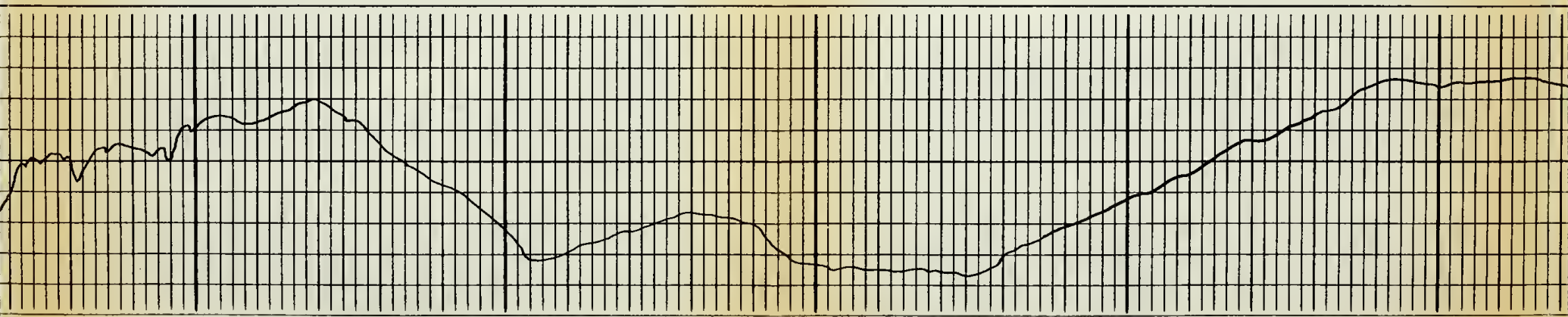
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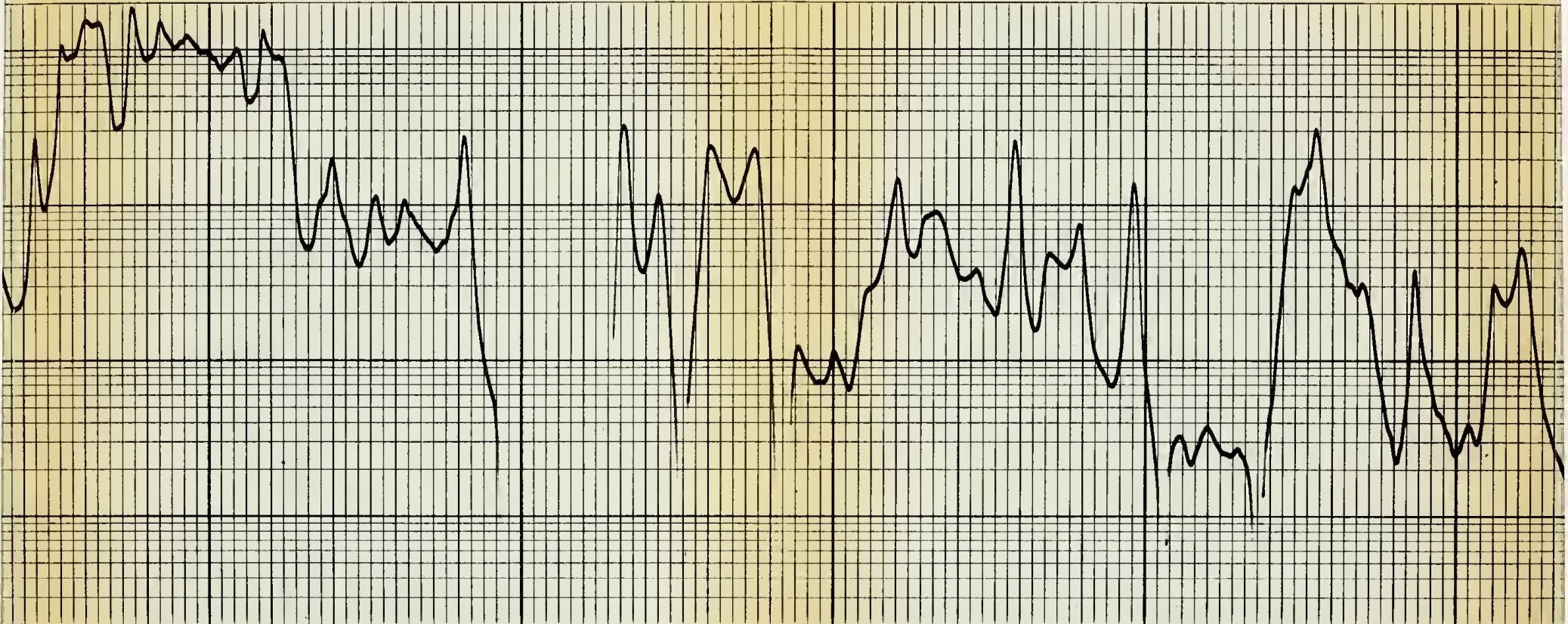


1700

1800



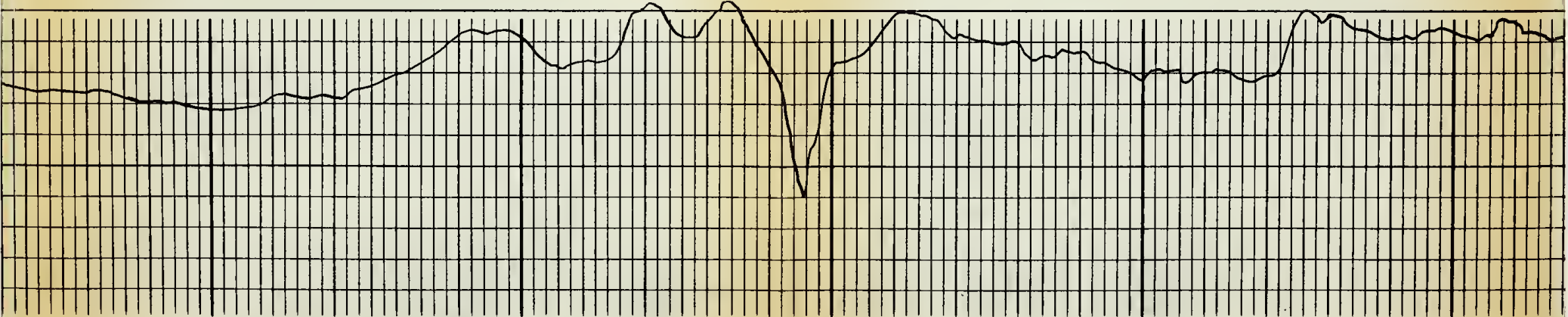


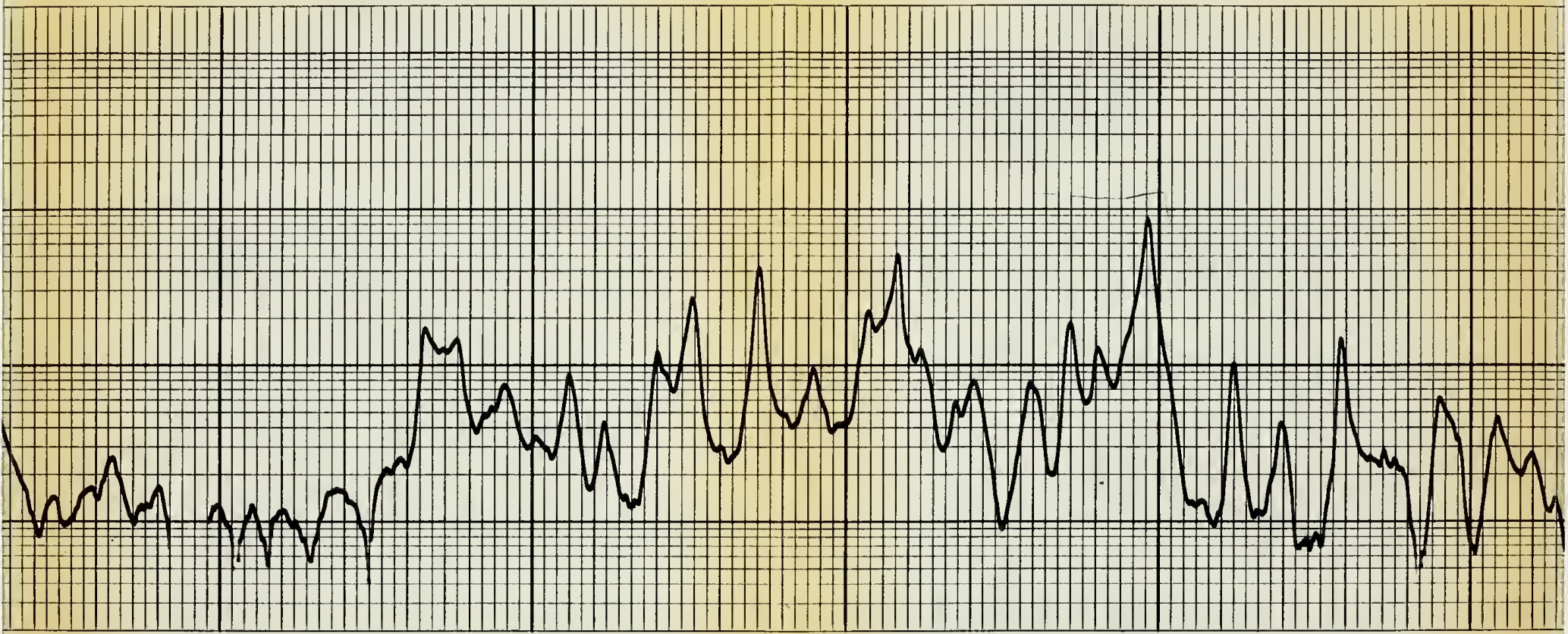


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2000

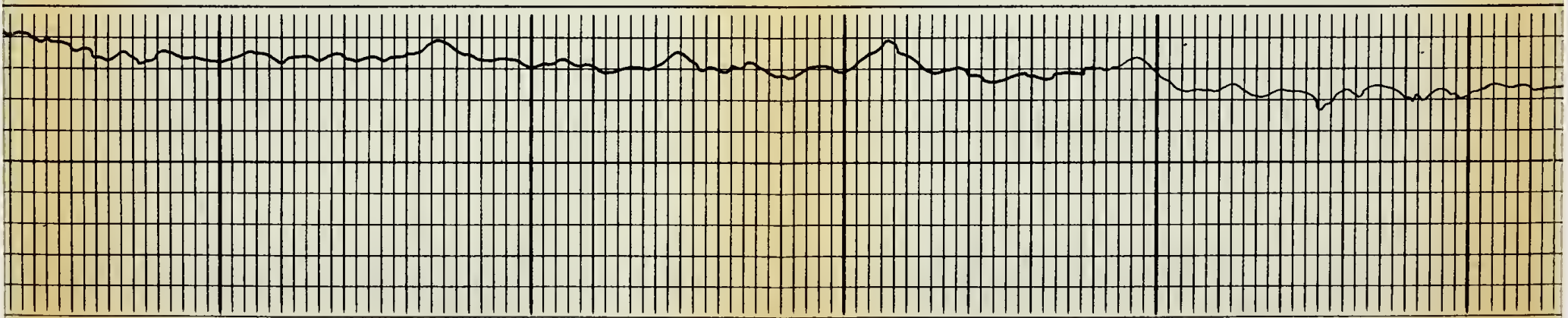
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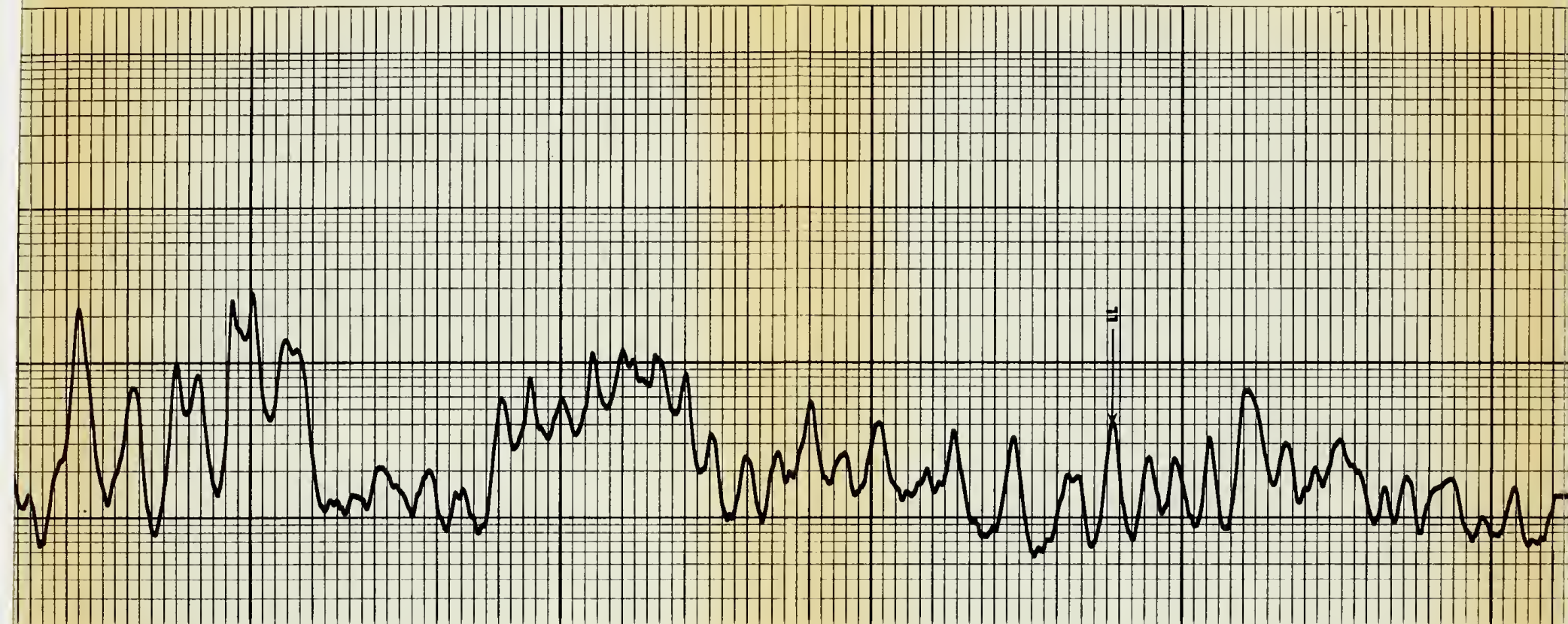


2200

2300



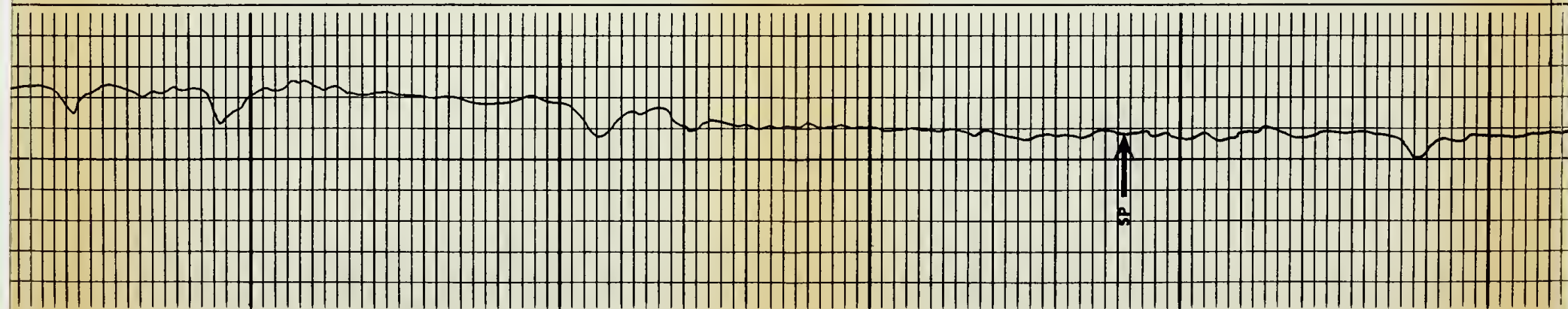




2400

2500

2600

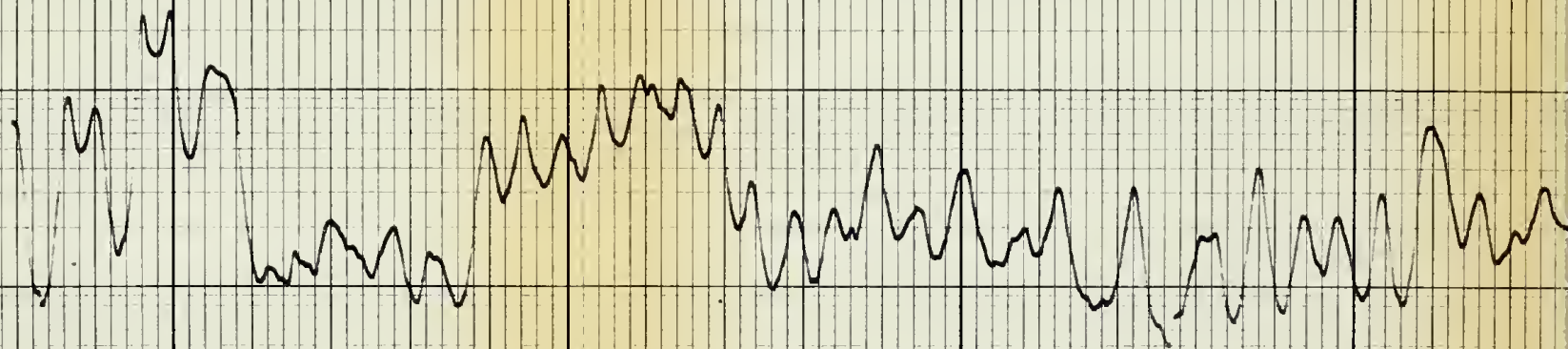


**REPEAT SECTION**

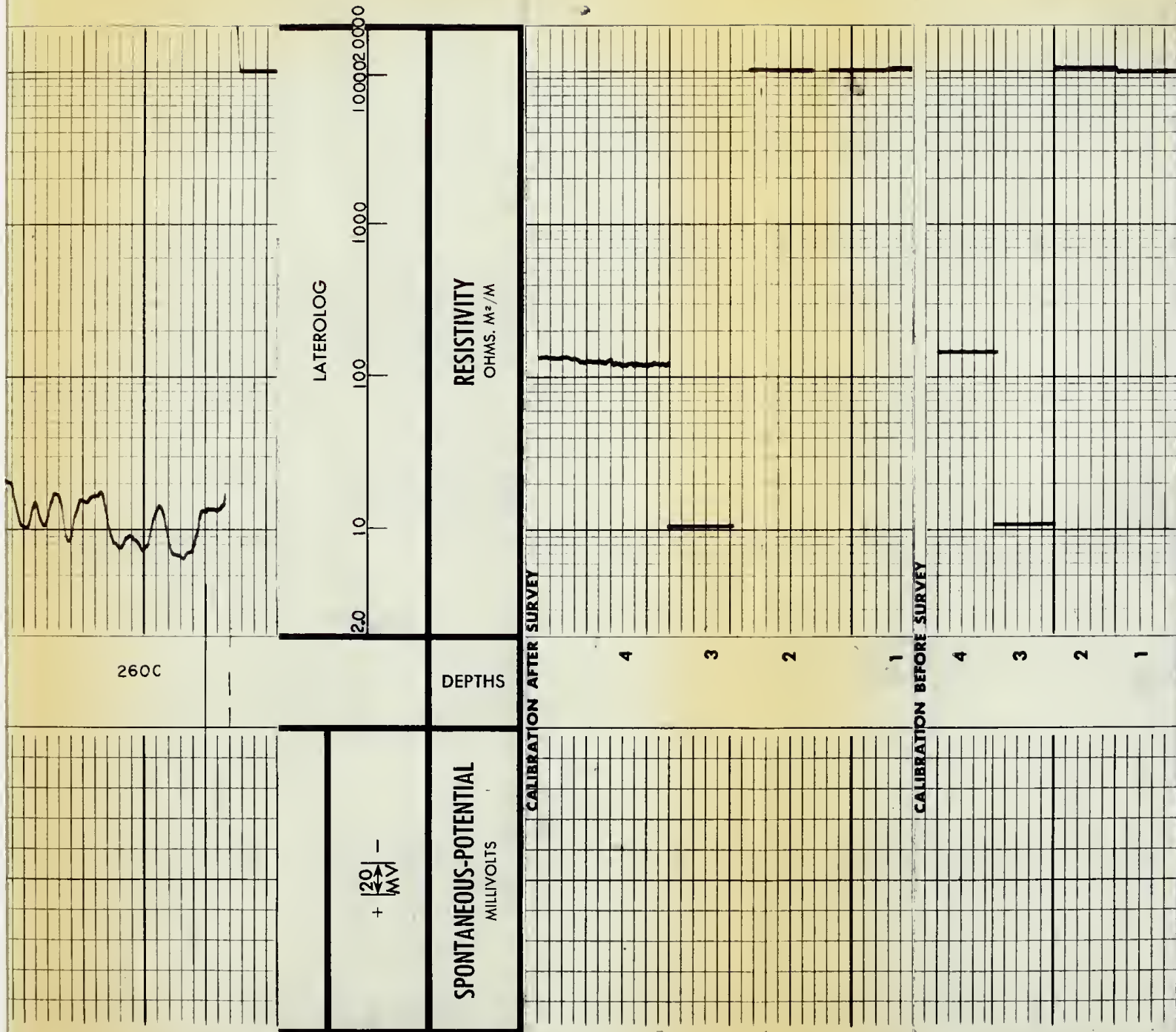
LR

240C

250C







COMPANY ATLANTIC RICHFIELD COMPANY

WELL SORGHUM GULCH #8

FIELD SORGHUM GULCH

COUNTY RIO BLANCO STATE COLORADO

SCHL. FR 2610  
SCHL. TD 2614  
DRLR TD 2608  
Elev:

KB ----  
DF 6542  
GL 6533

SG86

COREHOLE SG-8

THIS ENVELOPE CONTAINS THE FOLLOWING  
GEOPHYSICAL LOGS:

1. Schlumberger Formation Density
2. Schlumberger Temperature

II B-2209



# Schlumberger

# TEMPERATURE LOG

COUNTY <u>RIO BLANCO</u> FIELD or <u>SORGHUM GULCH</u> LOCATION <u>SORGHUM GULCH #8</u> WELL <u>SORGHUM GULCH #8</u> COMPANY <u>ATLANTIC RICHFIELD</u>	COMPANY <u>ATLANTIC RICHFIELD COMPANY</u>  WELL <u>SORGHUM GULCH #8</u> FIELD <u>SORGHUM GULCH</u> COUNTY <u>RIO BLANCO</u> STATE <u>COLORADO</u>  <div style="display: flex; justify-content: space-between;"> <div style="width: 70%;">           LOCATION <u>2600' FWL &amp; 2301' FSL</u>            Sec. <u>9</u> Twp. <u>35S</u> Rge. <u>96W</u> </div> <div style="width: 25%;">           Other Services:            BHC-GR            FDC-GR            LL-7            AMP-VDL         </div> </div>																																																																																												
Permanent Datum: <u>GL</u> ; Elev.: <u>6538</u> Log Measured From <u>GL</u> , <u>0</u> Ft. Above Perm. Datum Drilling Measured From <u>GL</u>																																																																																													
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Date</td> <td style="width: 40%;">11-26-74</td> <td style="width: 40%;">11-28-74</td> <td style="width: 5%;"></td> </tr> <tr> <td>Run No.</td> <td>ONE</td> <td>TWO</td> <td></td> </tr> <tr> <td>Depth-Driller</td> <td>2608</td> <td>2608</td> <td></td> </tr> <tr> <td>Depth-Logger</td> <td>2610</td> <td>2603</td> <td></td> </tr> <tr> <td>Btm. Log Interval</td> <td>2609</td> <td>2602</td> <td></td> </tr> <tr> <td>Top Log Interval</td> <td>00:00</td> <td>124</td> <td></td> </tr> <tr> <td>Casing-Driller</td> <td>8-5/8 @ 176</td> <td>8-5/8 @ 176</td> <td>@</td> </tr> <tr> <td>Casing-Logger</td> <td>173</td> <td>170</td> <td></td> </tr> <tr> <td>Casing Size</td> <td>1 To</td> <td>To</td> <td>To</td> </tr> <tr> <td></td> <td>2 To</td> <td>To</td> <td>To</td> </tr> <tr> <td>Casing Weight</td> <td>1</td> <td></td> <td></td> </tr> <tr> <td></td> <td>2</td> <td></td> <td></td> </tr> <tr> <td>Casing Thickness</td> <td>1</td> <td></td> <td></td> </tr> <tr> <td></td> <td>2</td> <td></td> <td></td> </tr> <tr> <td>Bit Size</td> <td>1 6-1/4 To</td> <td>6-1/4 To</td> <td>To</td> </tr> <tr> <td></td> <td>2 To</td> <td>To</td> <td>To</td> </tr> <tr> <td>Type Fluid in Hole</td> <td>WATER</td> <td>WATER</td> <td></td> </tr> <tr> <td>Dens.</td> <td>Visc.</td> <td></td> <td></td> </tr> <tr> <td>Time Since Circ.</td> <td>1700 HOURS</td> <td>5 HOURS</td> <td></td> </tr> <tr> <td>BHT</td> <td>134° F</td> <td>134° F</td> <td></td> </tr> <tr> <td>Equip.</td> <td>Location</td> <td>VERNAL</td> <td>VERNAL</td> </tr> <tr> <td>Recorded By</td> <td>LANGLEY</td> <td>ETTER</td> <td></td> </tr> <tr> <td>Witnessed By</td> <td>BURNS</td> <td>BURNS &amp; TAIT</td> <td></td> </tr> </table>		Date	11-26-74	11-28-74		Run No.	ONE	TWO		Depth-Driller	2608	2608		Depth-Logger	2610	2603		Btm. Log Interval	2609	2602		Top Log Interval	00:00	124		Casing-Driller	8-5/8 @ 176	8-5/8 @ 176	@	Casing-Logger	173	170		Casing Size	1 To	To	To		2 To	To	To	Casing Weight	1				2			Casing Thickness	1				2			Bit Size	1 6-1/4 To	6-1/4 To	To		2 To	To	To	Type Fluid in Hole	WATER	WATER		Dens.	Visc.			Time Since Circ.	1700 HOURS	5 HOURS		BHT	134° F	134° F		Equip.	Location	VERNAL	VERNAL	Recorded By	LANGLEY	ETTER		Witnessed By	BURNS	BURNS & TAIT	
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Recorded By	LANGLEY	ETTER																																																																																											
Witnessed By	BURNS	BURNS & TAIT																																																																																											

COL 01000000

The well name, location and borehole reference data were furnished by the customer.

REMARKS: SERVICE ORDER # 28182 RUN ONE-REPEAT OF TOP 1100' OF LOG RUN APPROXIMATELY 2 HOURS AFTER RAIN LOG & HOLE FILLED WITH WATER - 1ST RUN 7:00 P.M. - 2ND RUN 3:00 PM RUN TWO - ~ 24 HOURS AFTER RUN 1.

LOG ON BOTTOM @ 2100 HOURS 28TH. --REPEATS RUN AFTER LOG. --COULD NOT GET DOWN  
PAST FLOCATING MATERIAL @ 100' FOR MUCH TIME AND EFFORT. --TOOL INDICATED @ 20°F  
BEFORE GETTING WET AND HAVING TROUBLE GETTING DOWN.

EQUIPMENT: PPU 748; CEC 771; CCE 773; MTS 774 - BOTH RUNS

[illegible]

## REDUCED SENSITIVITY TEMPERATURE

TEMPERATURE °F.

0	200	CASING COLLARS RECORDED 12, JEEP
---	-----	--

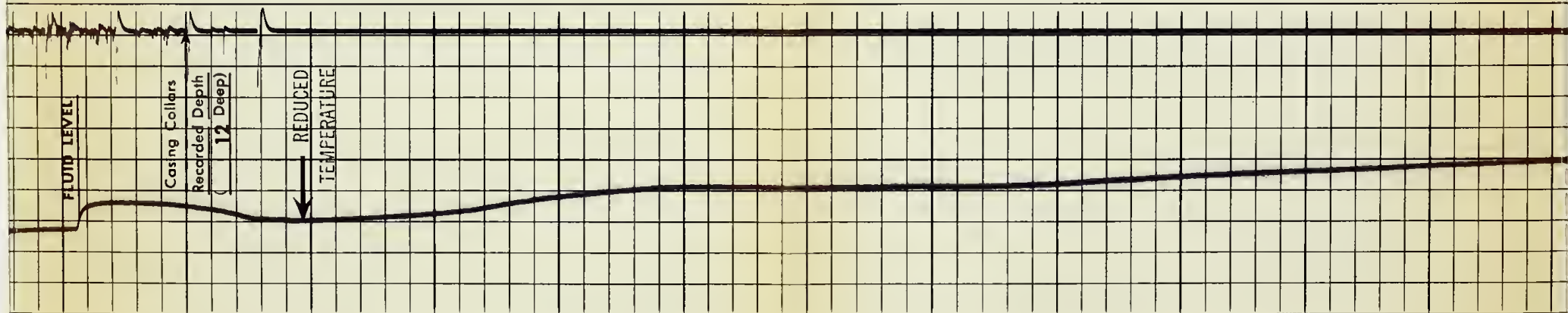
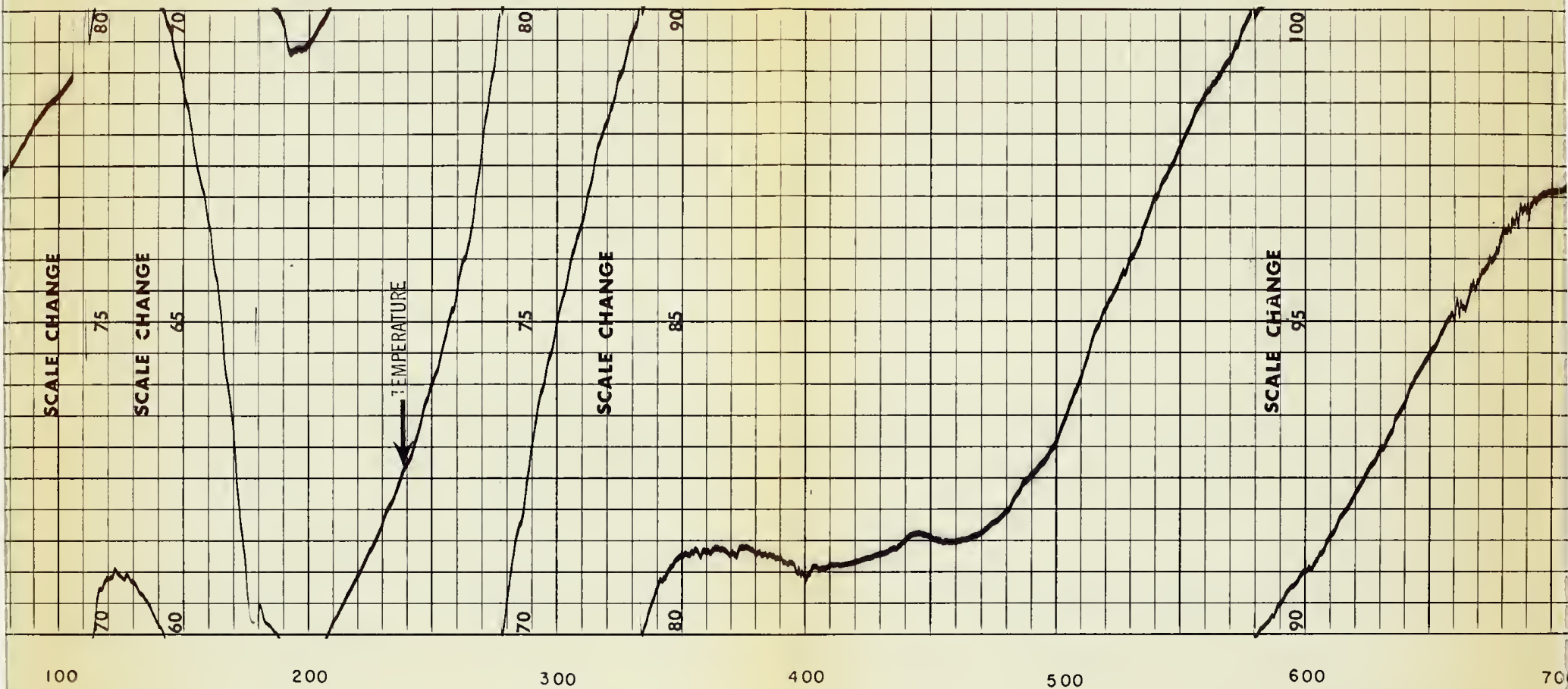
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54

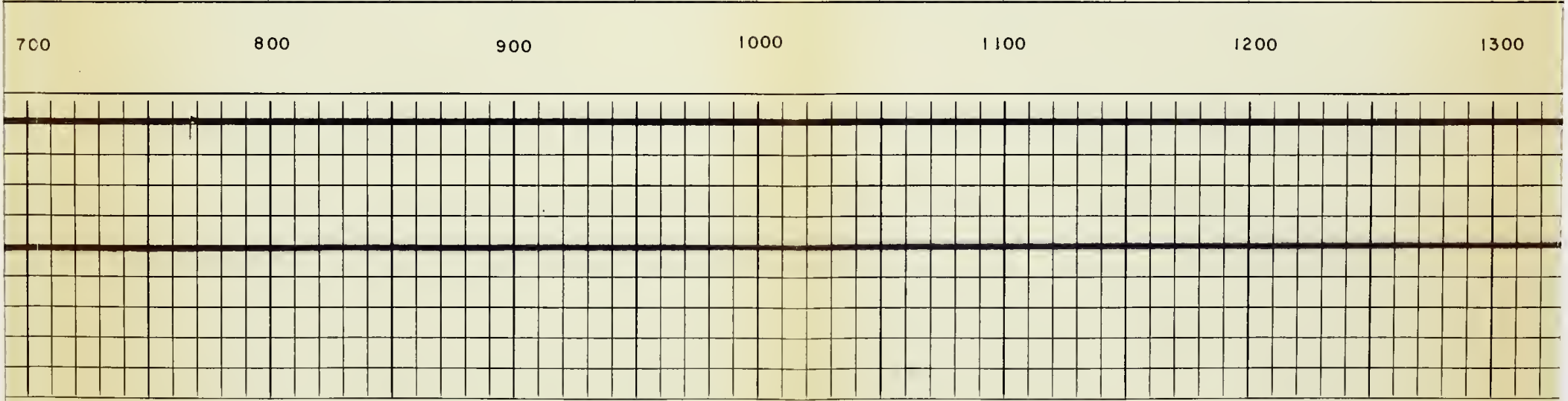
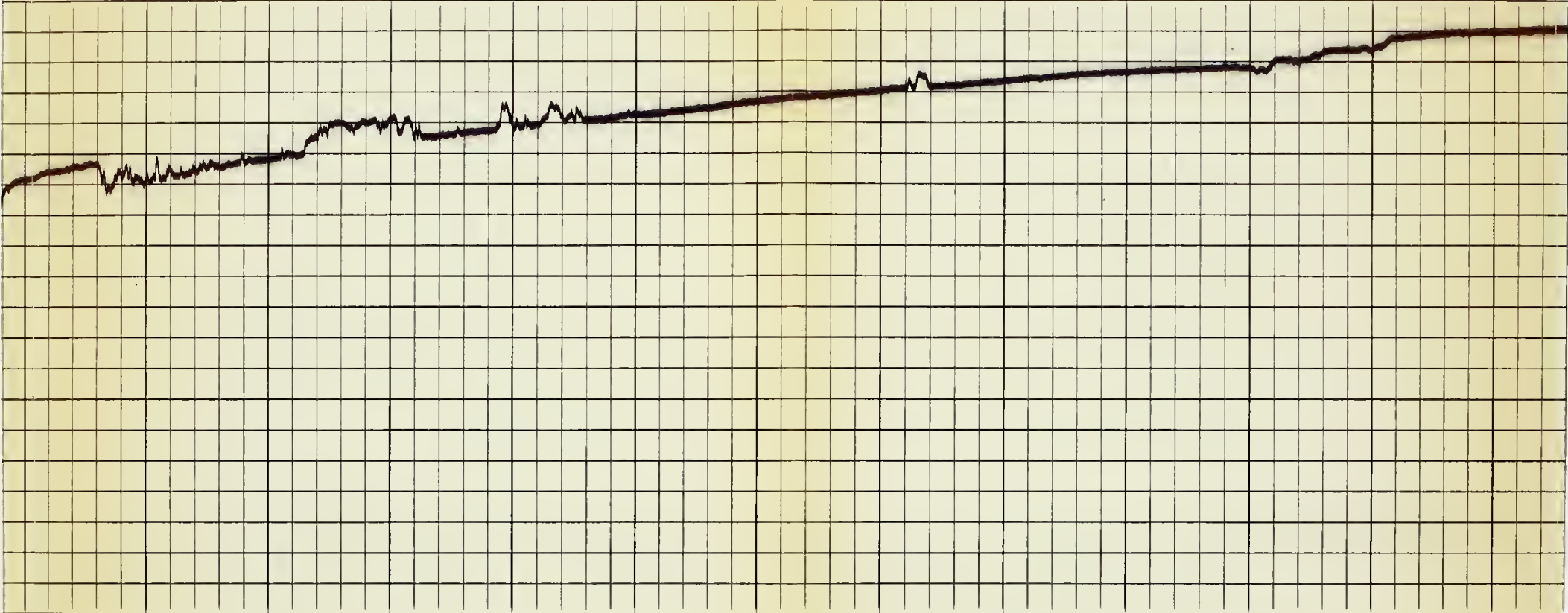
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Miss No.

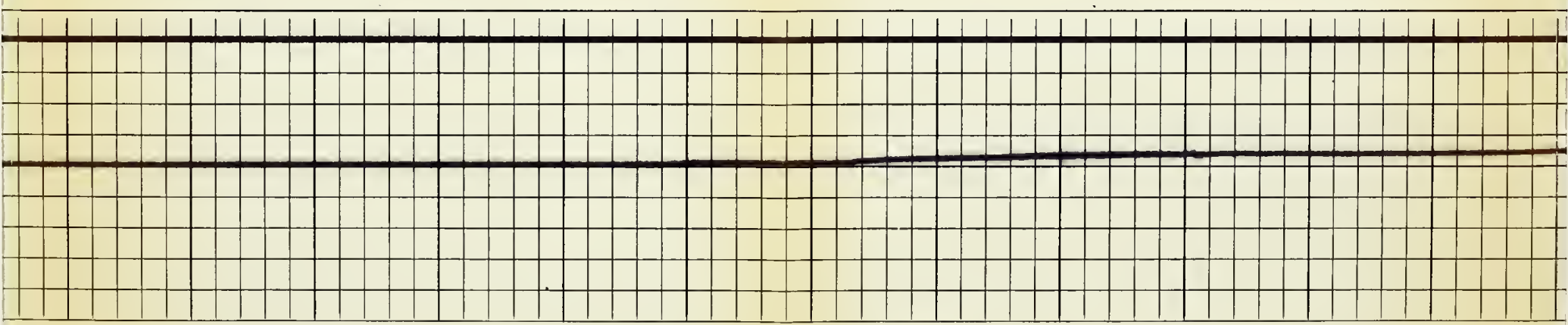
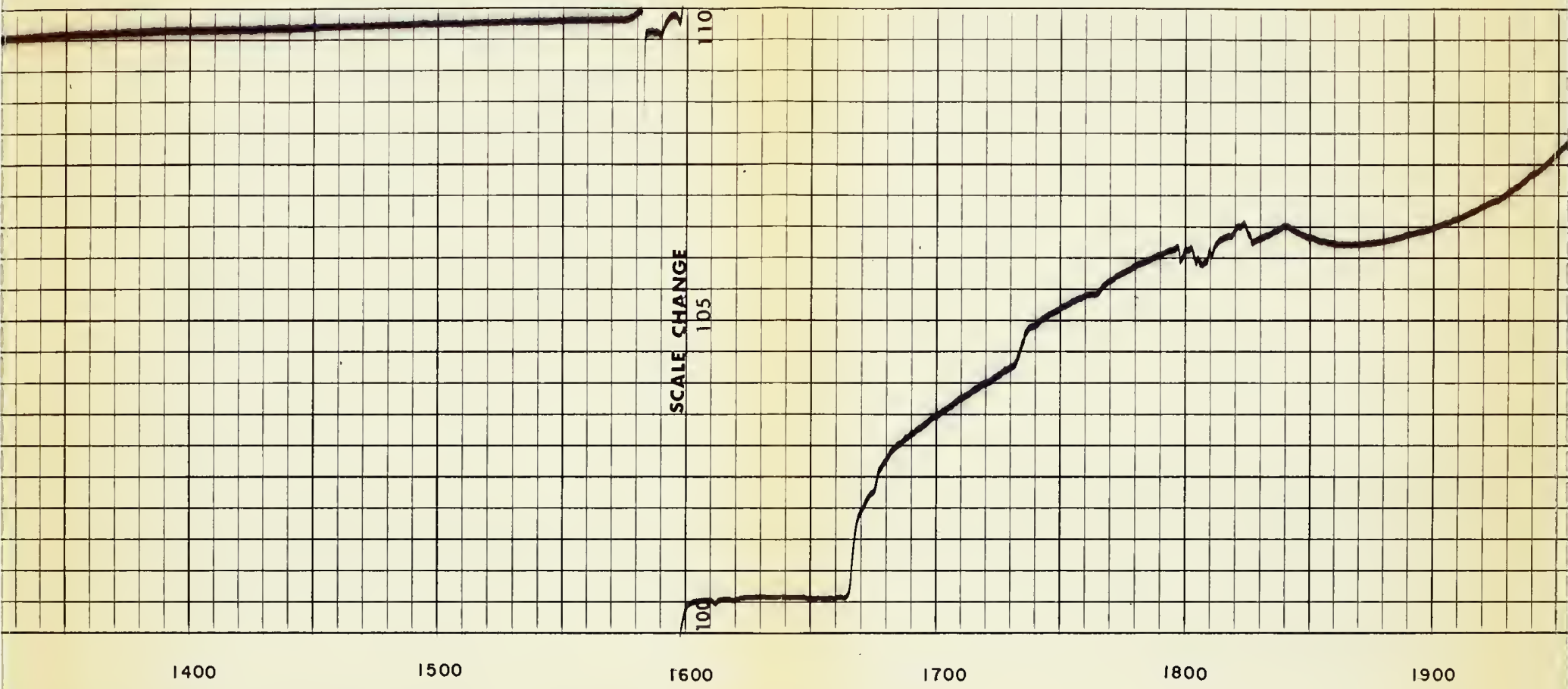
SCALE CHANGE



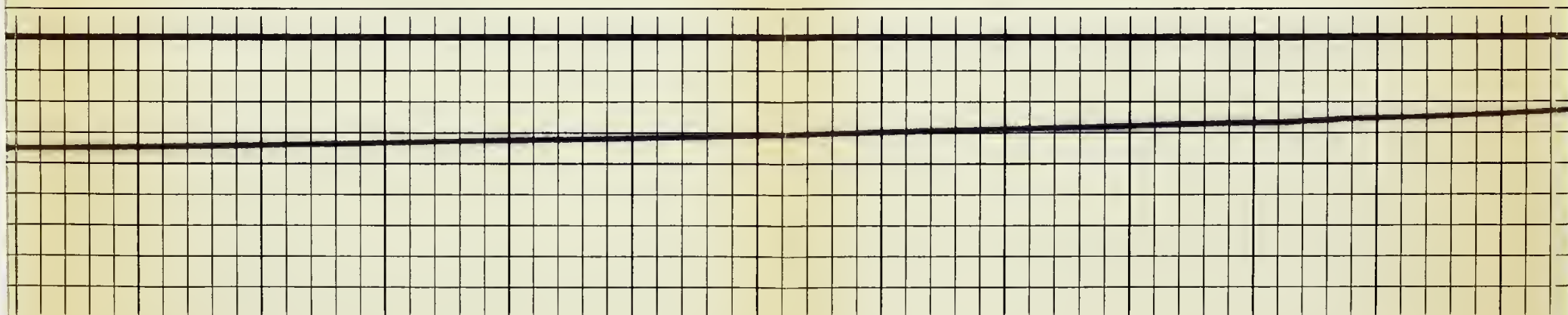
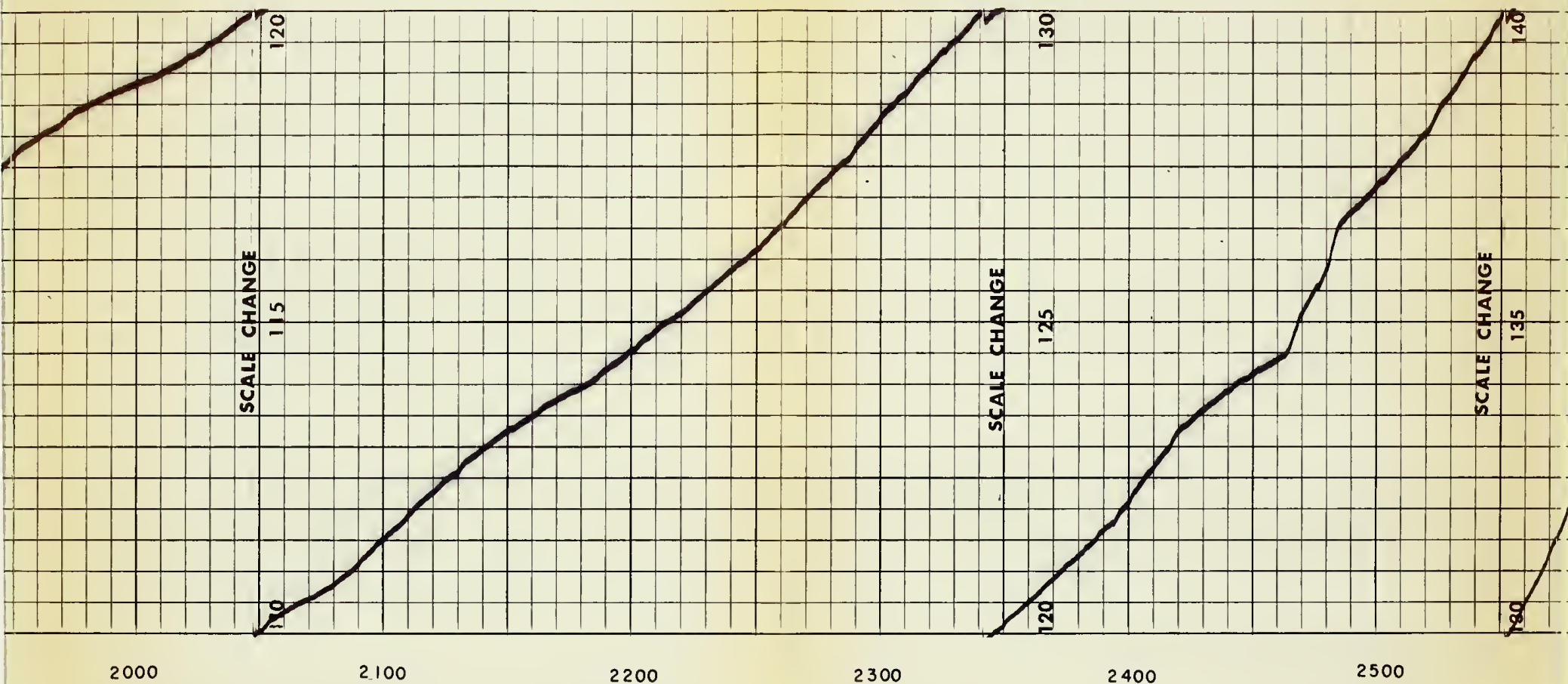






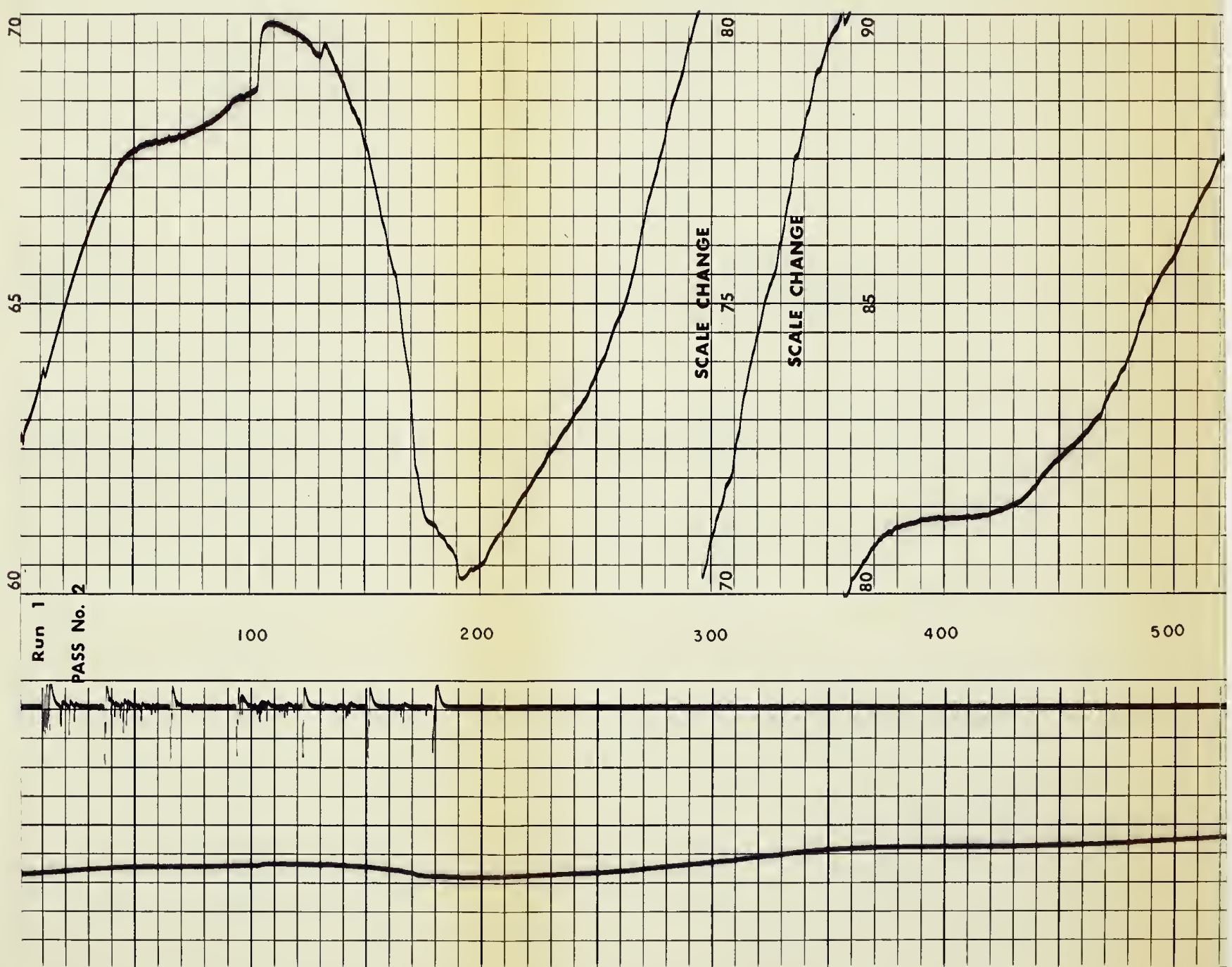




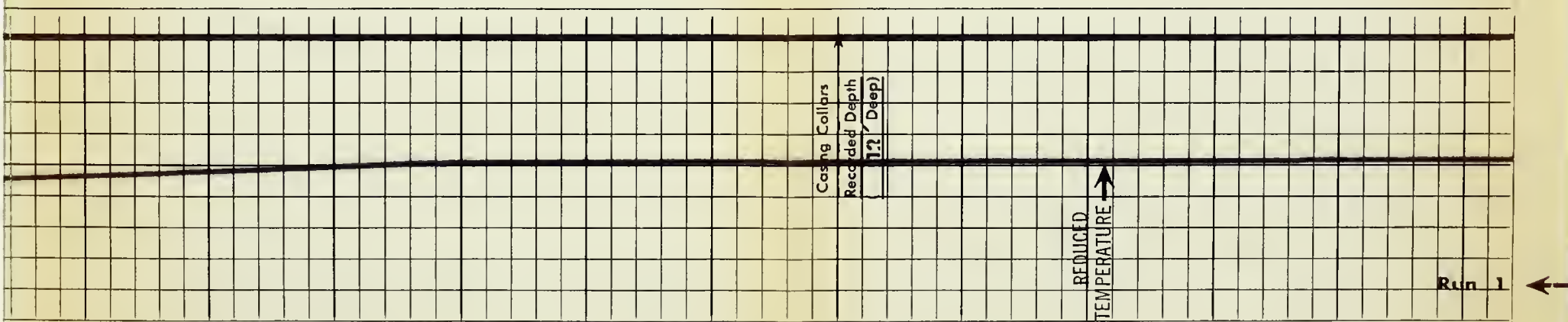
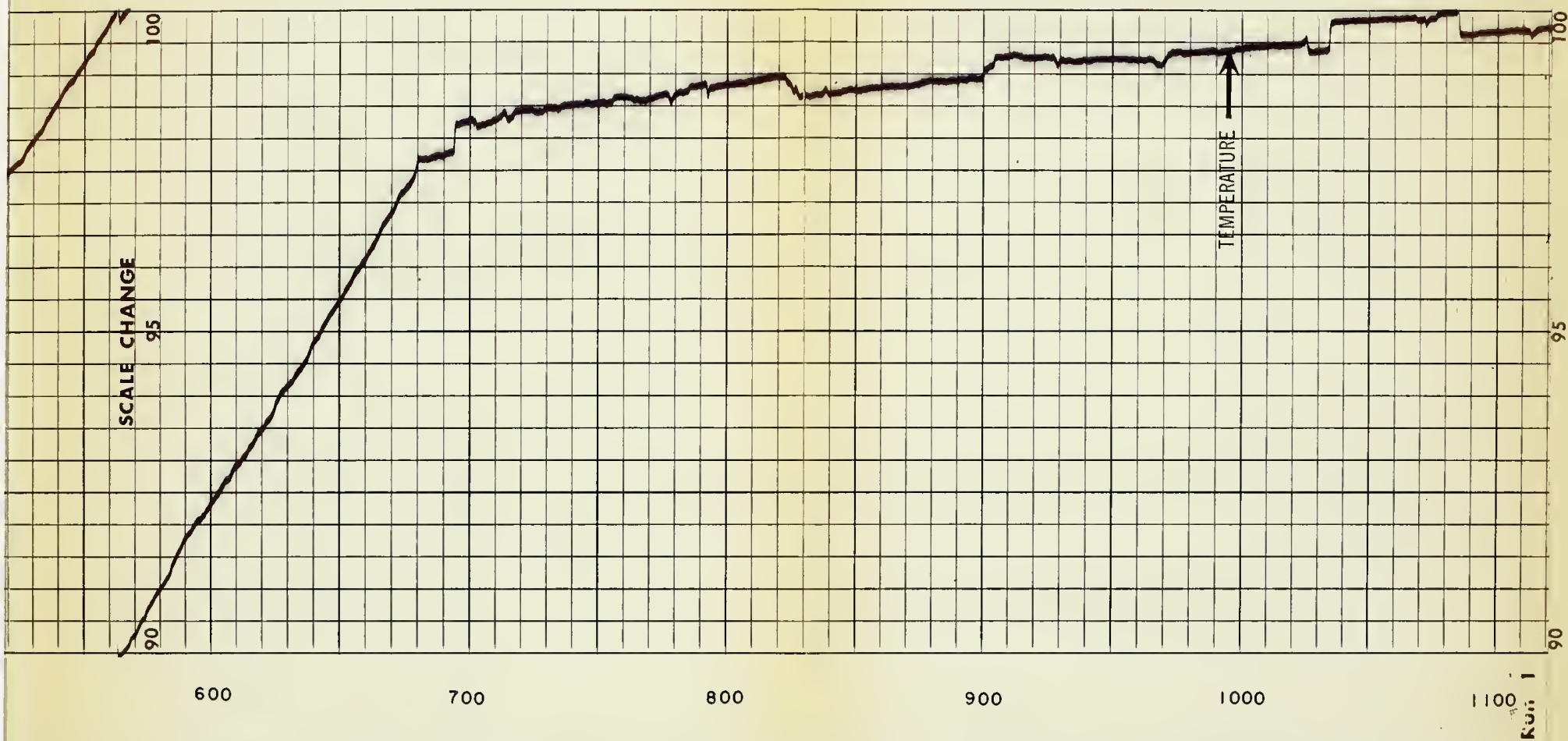


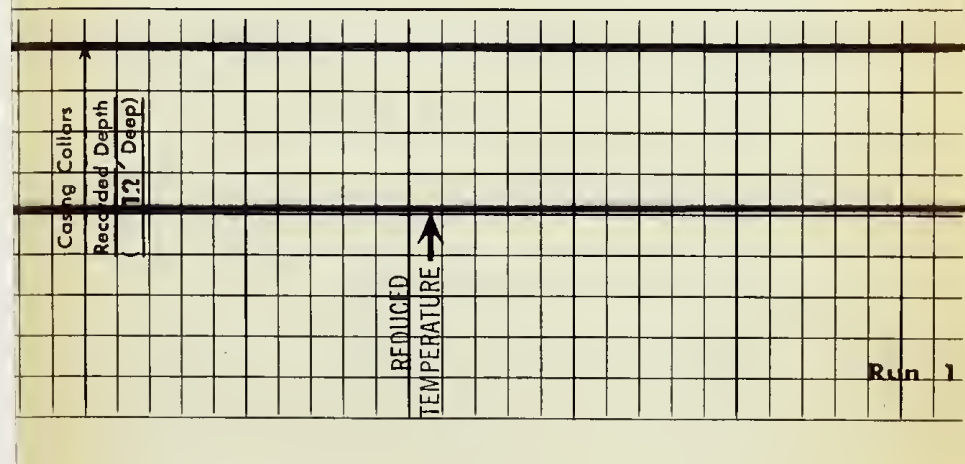
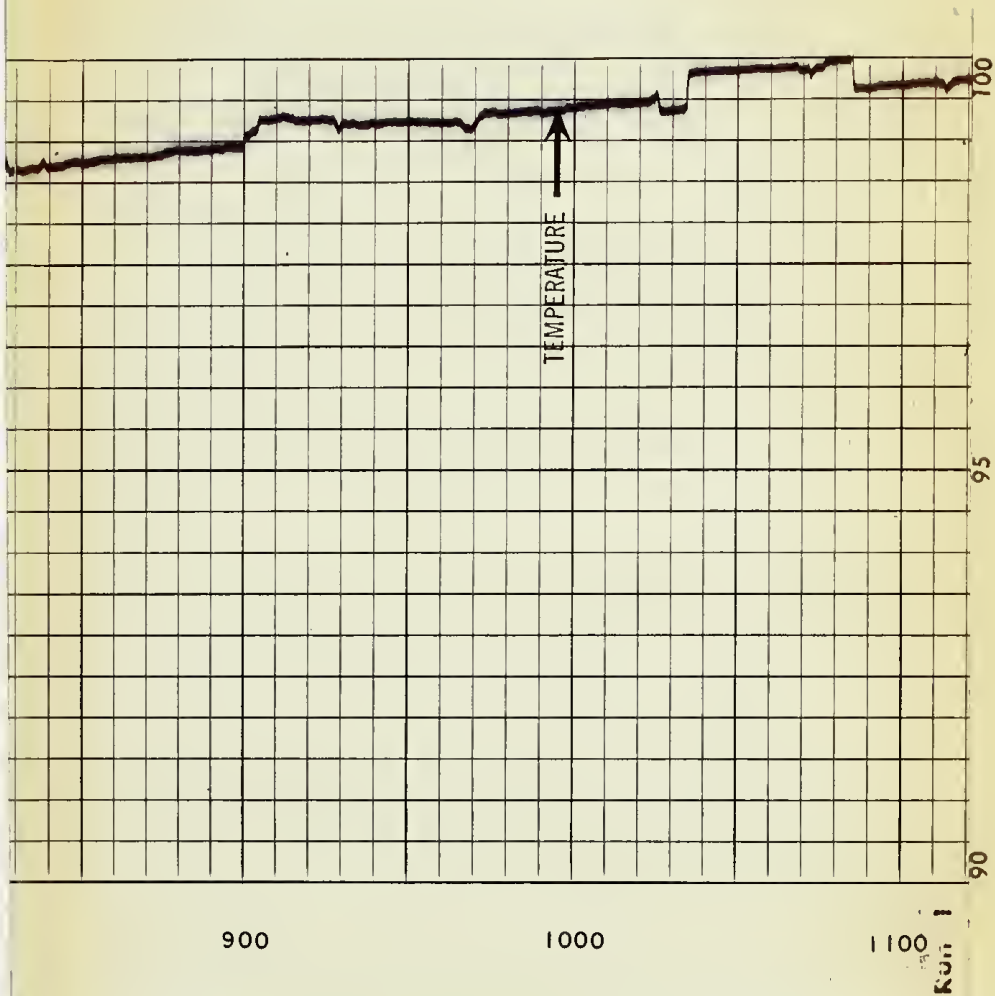


SCALE CHANGE

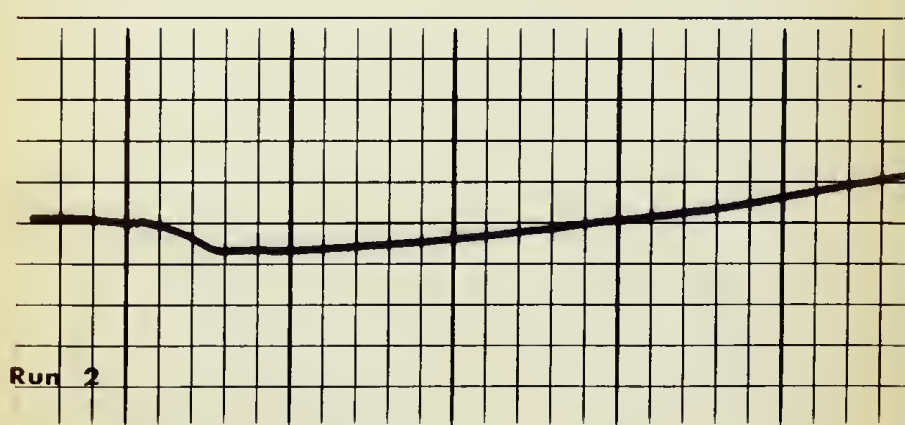
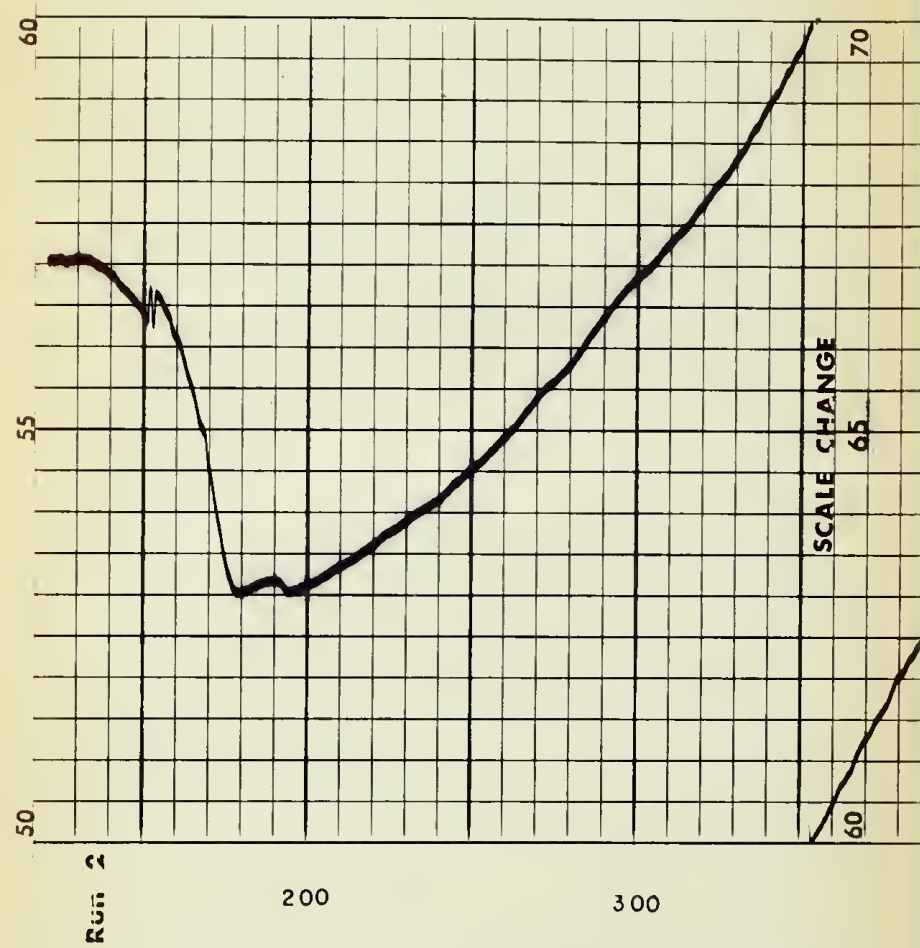








SCALE CHANGE

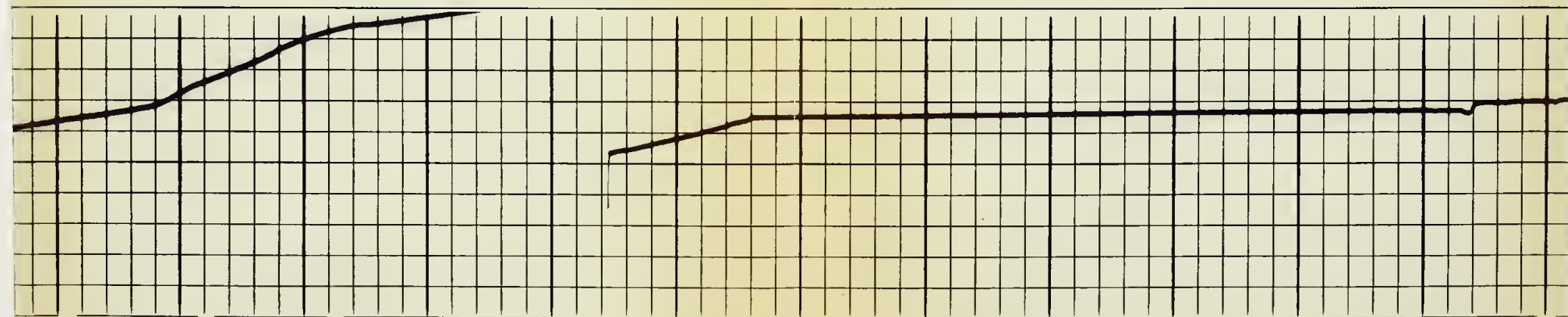
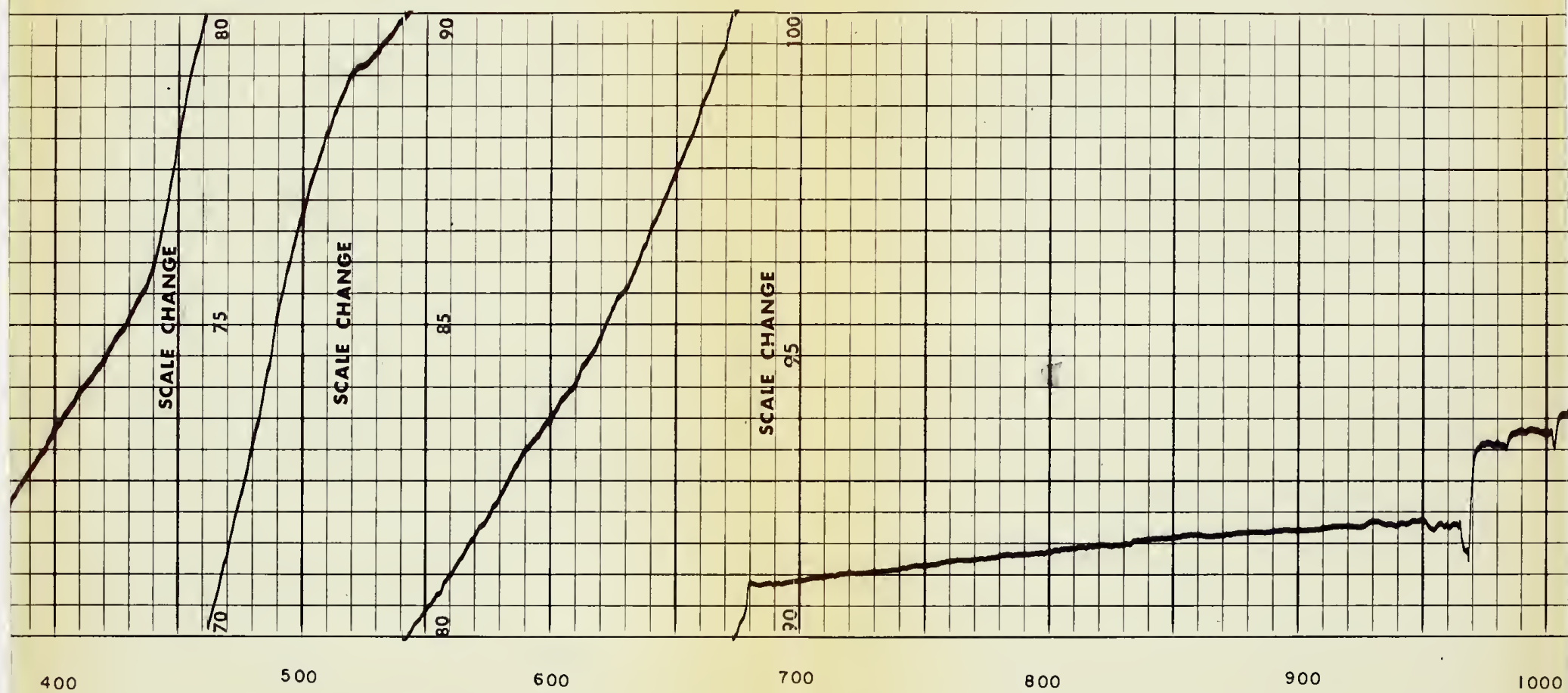


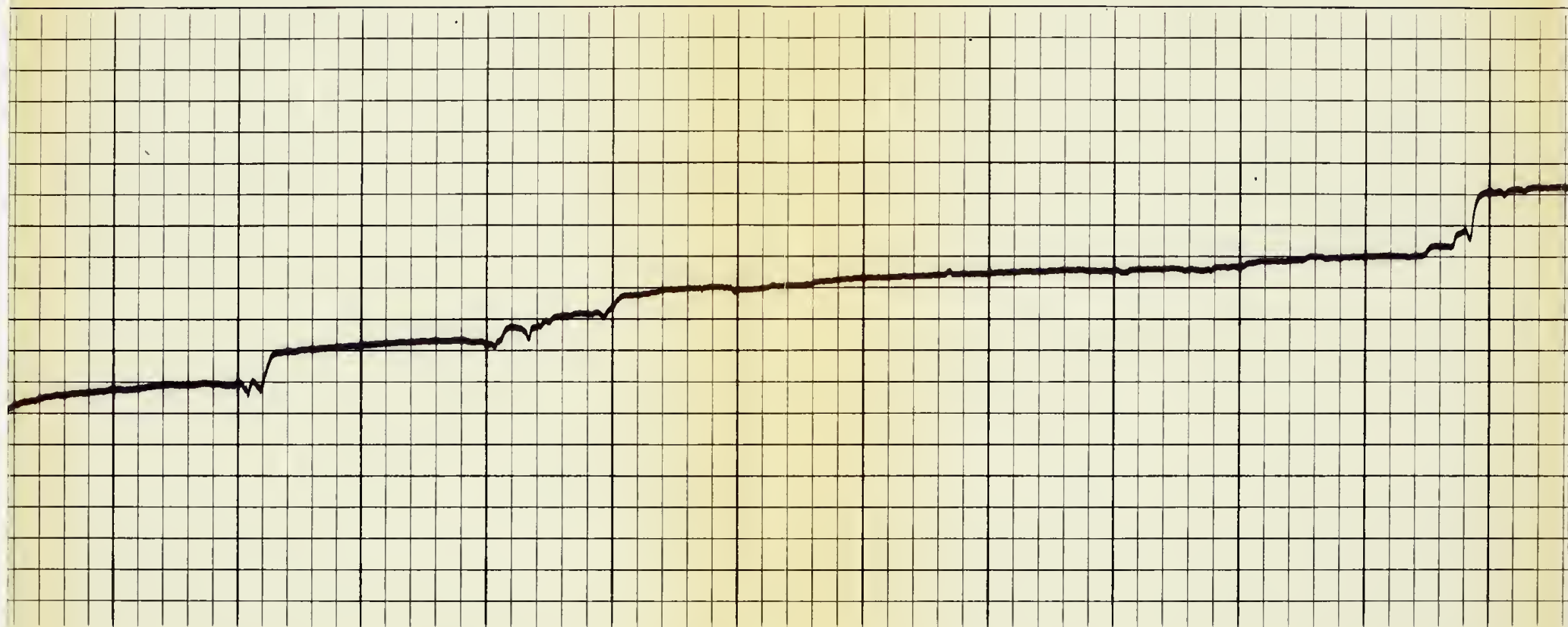
Run 1



Run 2







1100

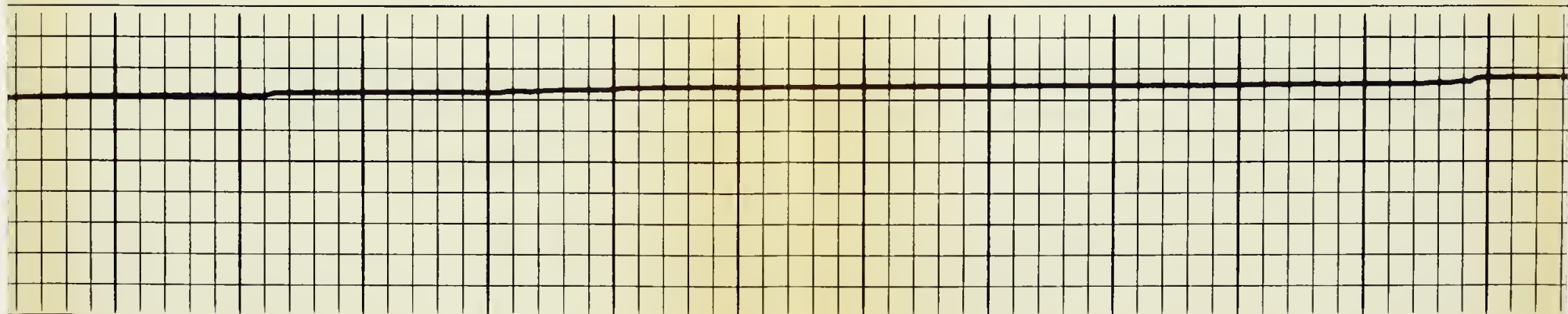
1200

1300

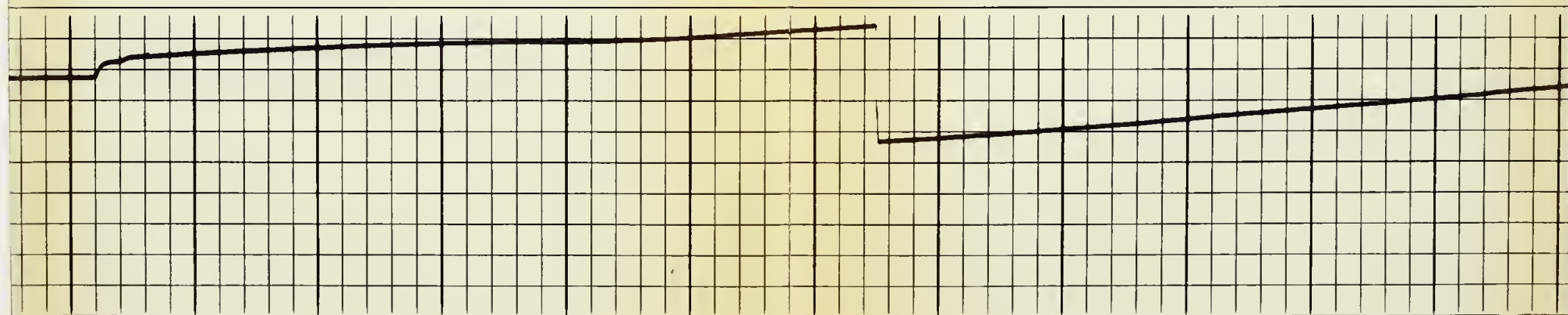
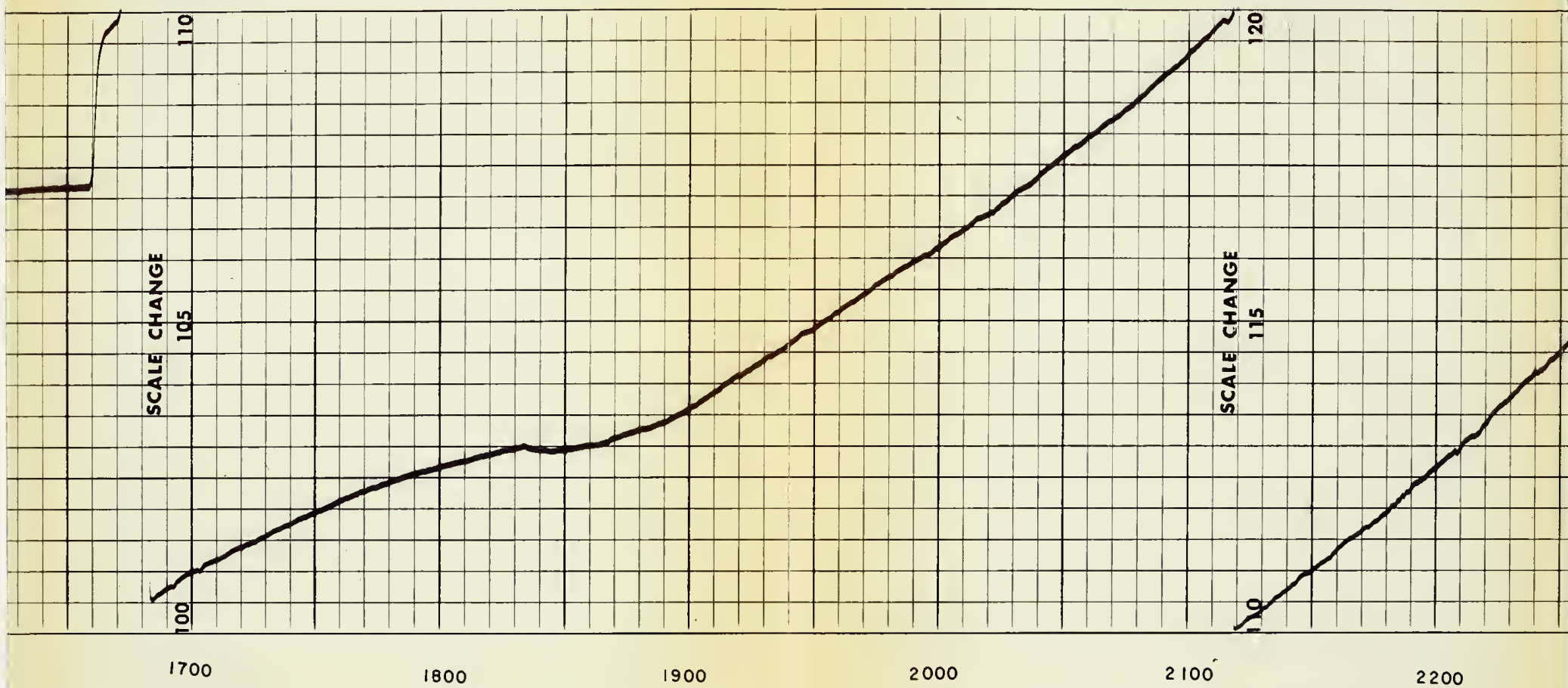
1400

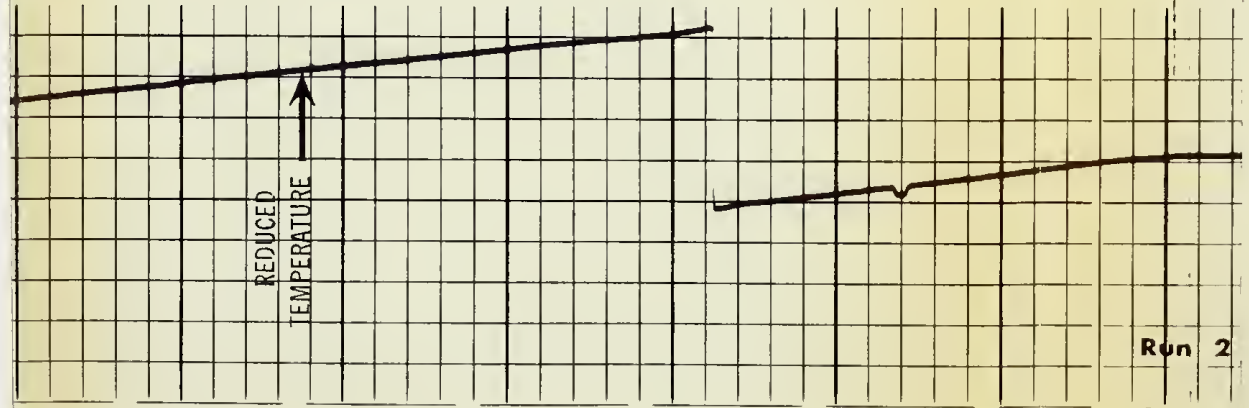
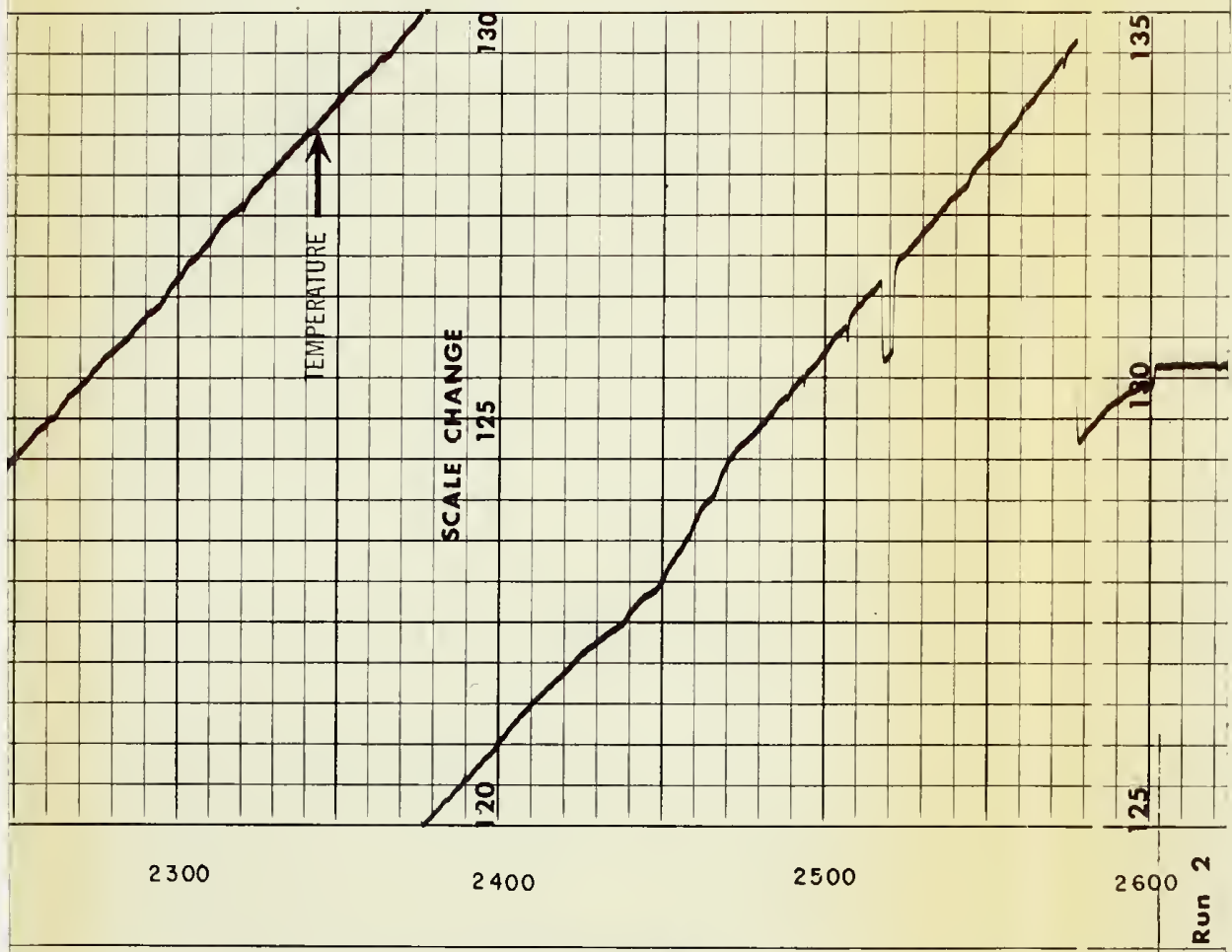
1500

1600

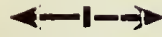
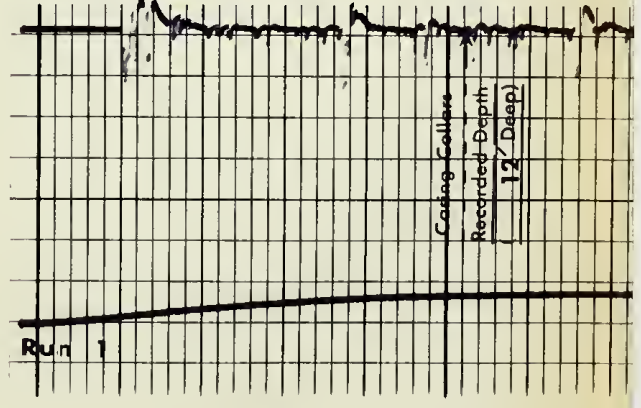
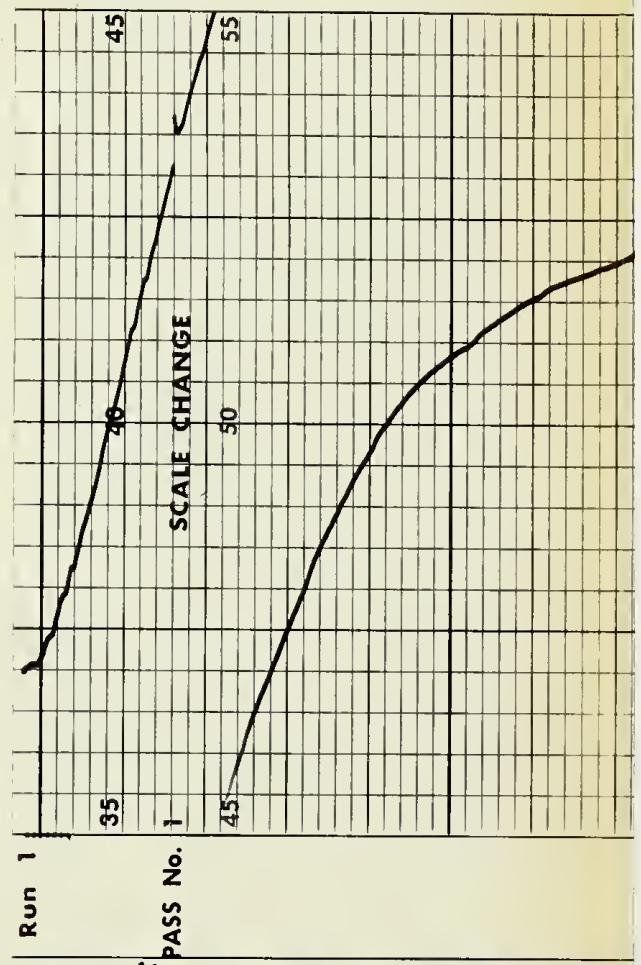




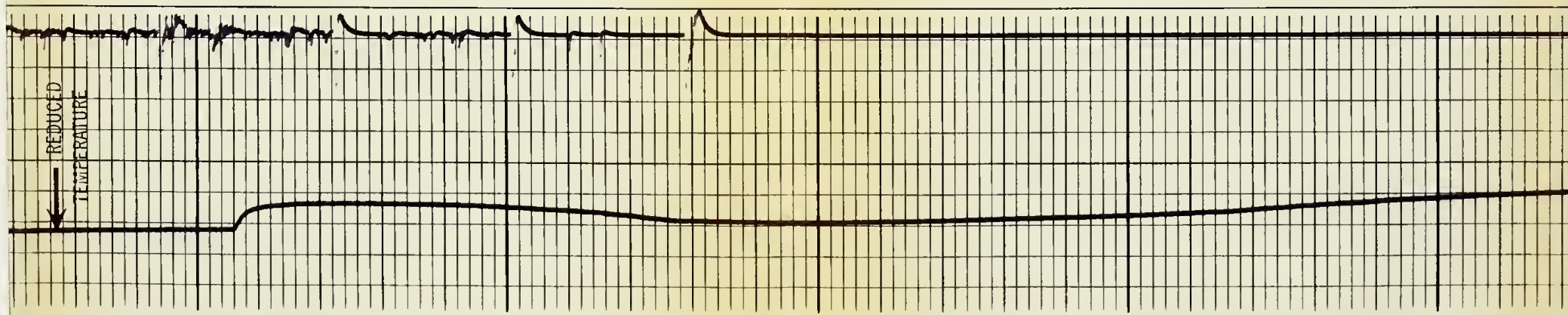


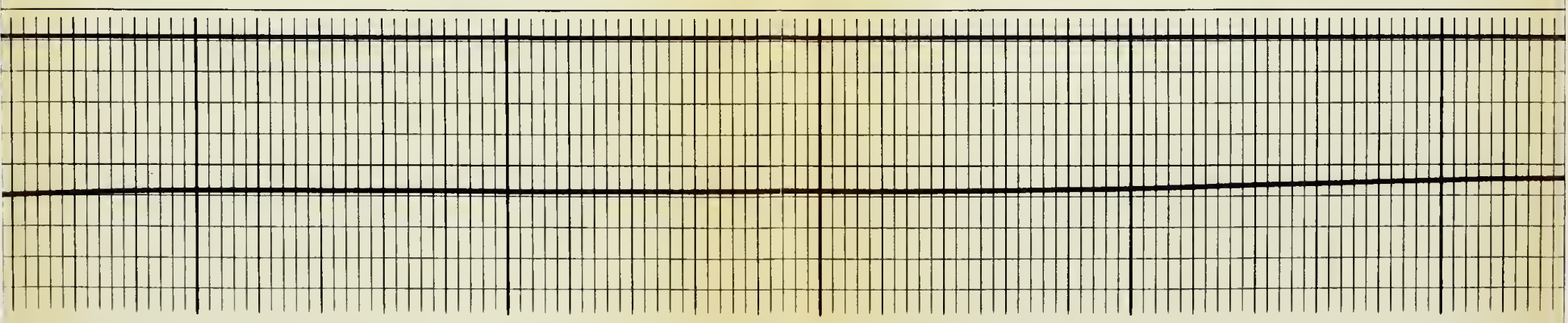
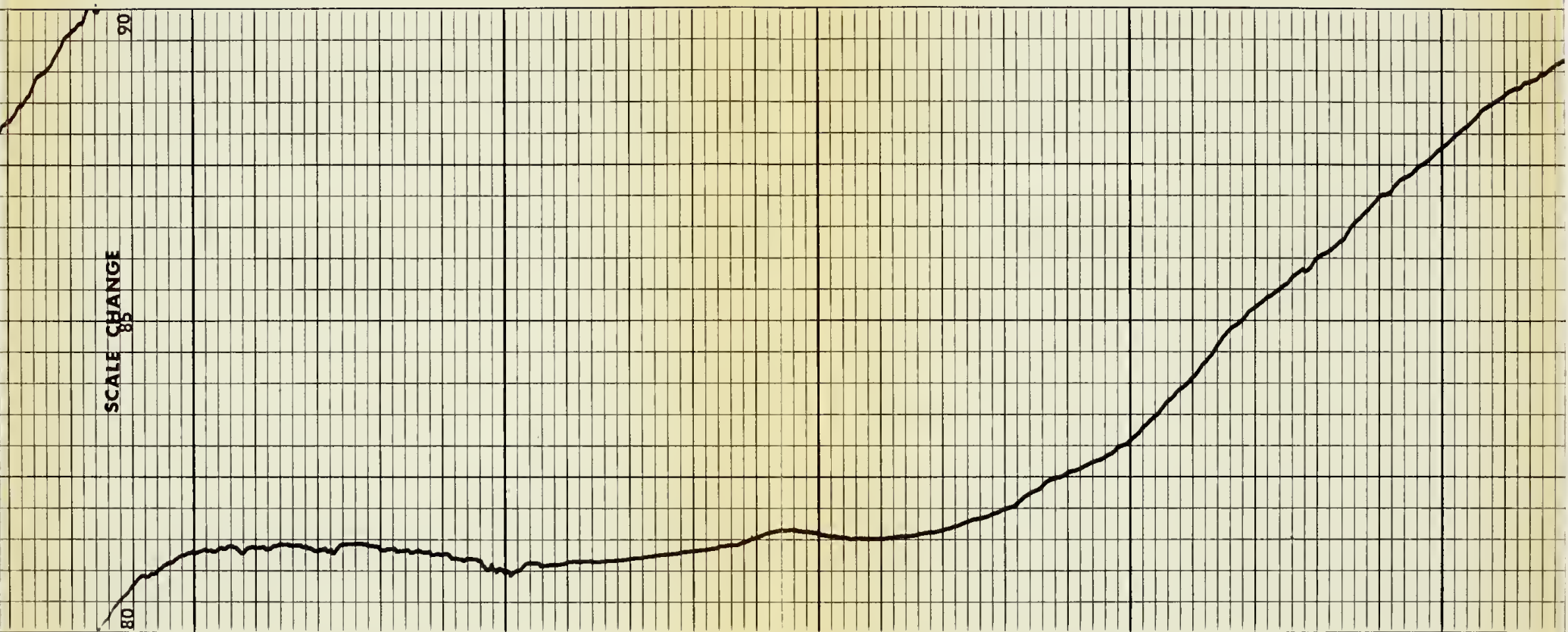


SCALE CHANGE











SCALE CHANGE

100

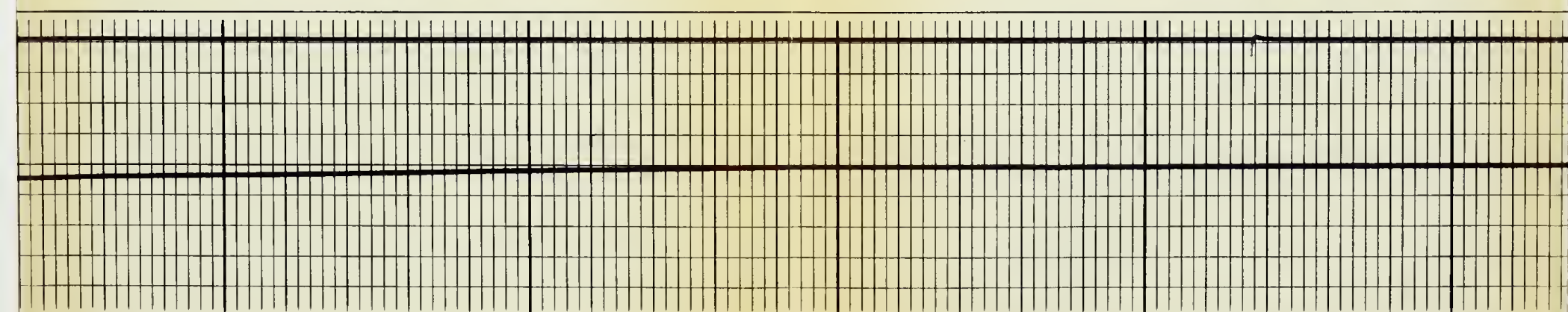
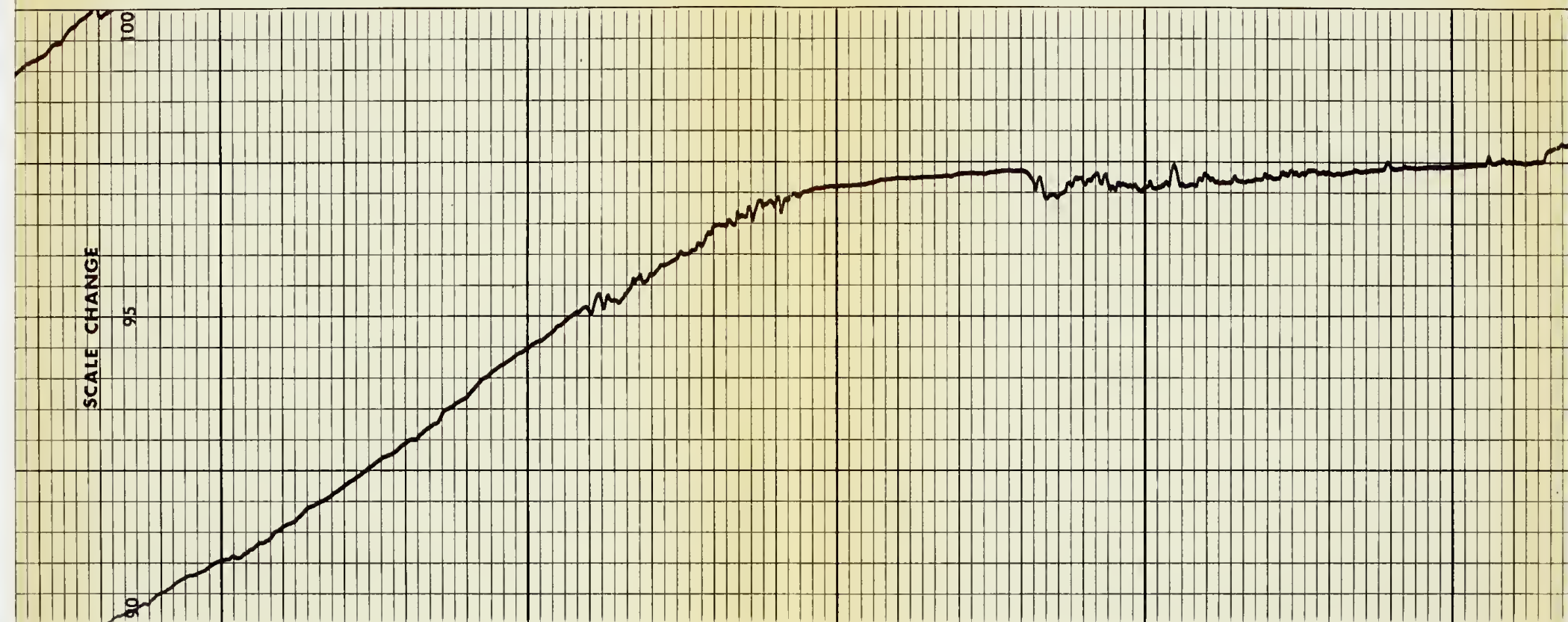
95

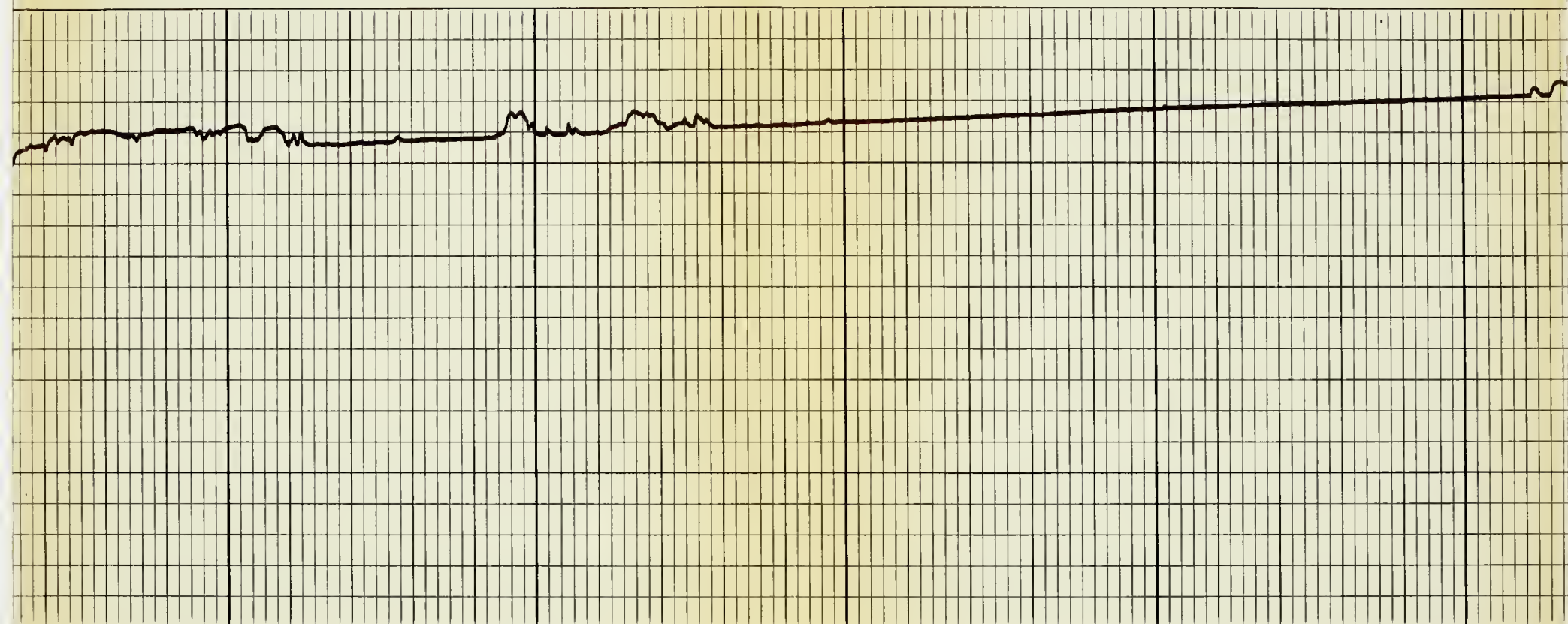
90

600

700

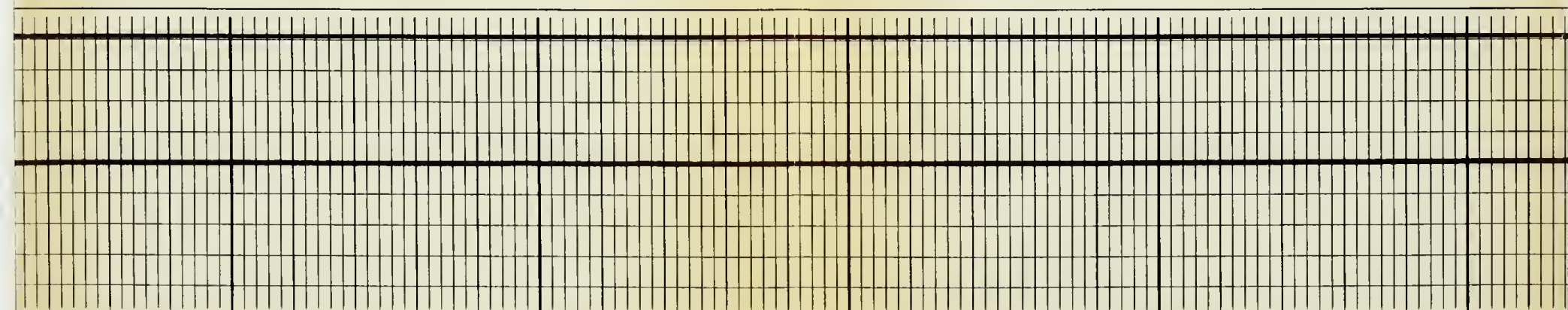
800



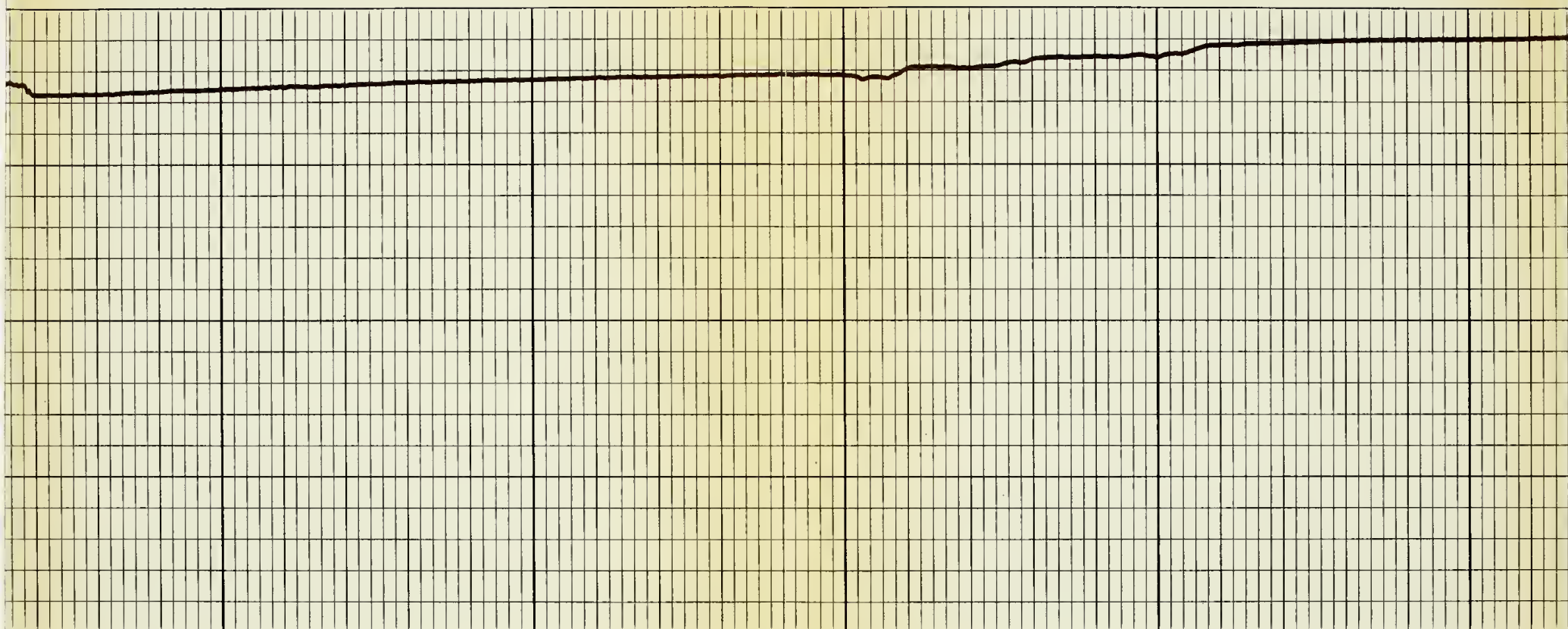


900

1000



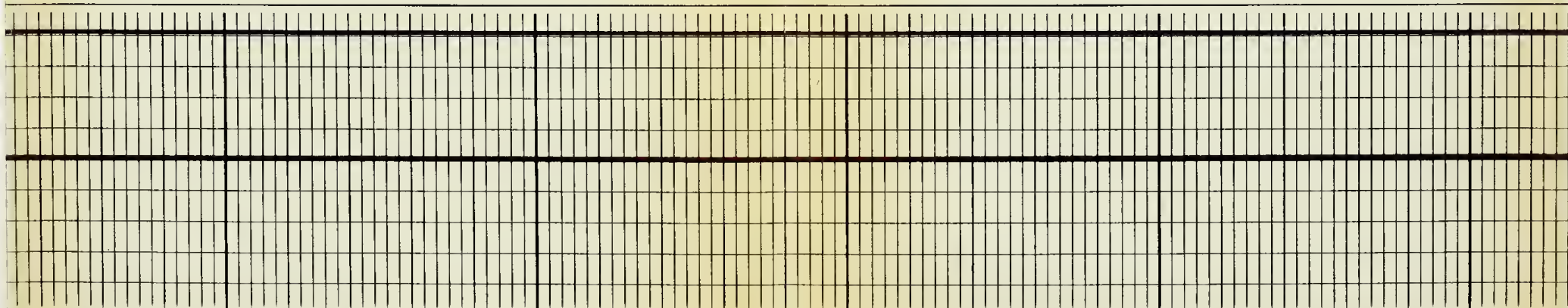


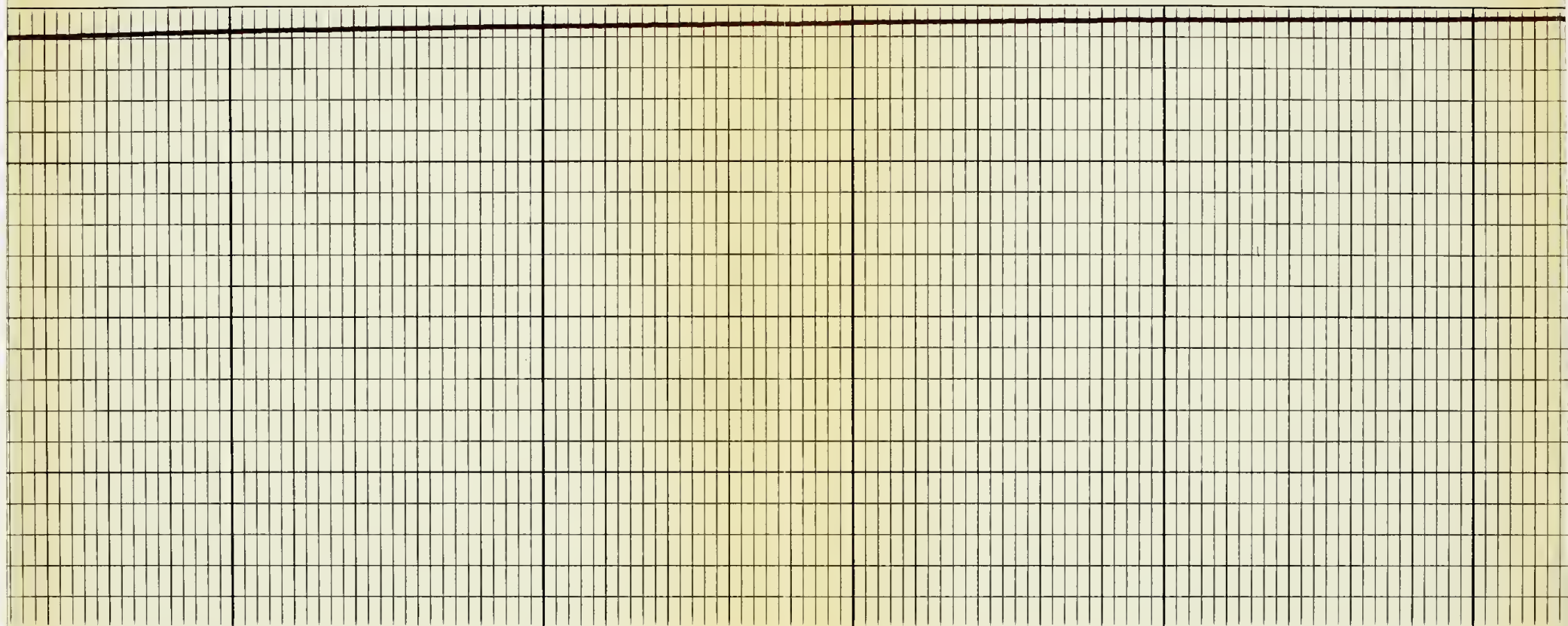


1100

1200

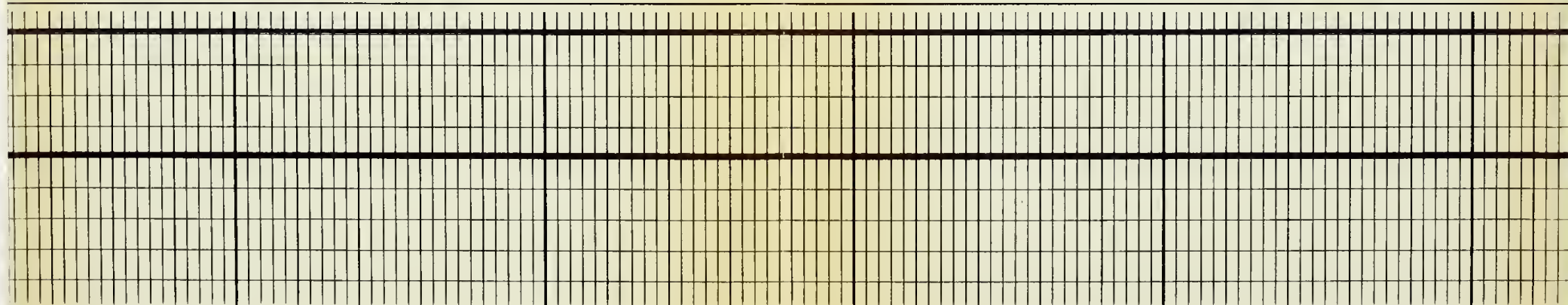
1300



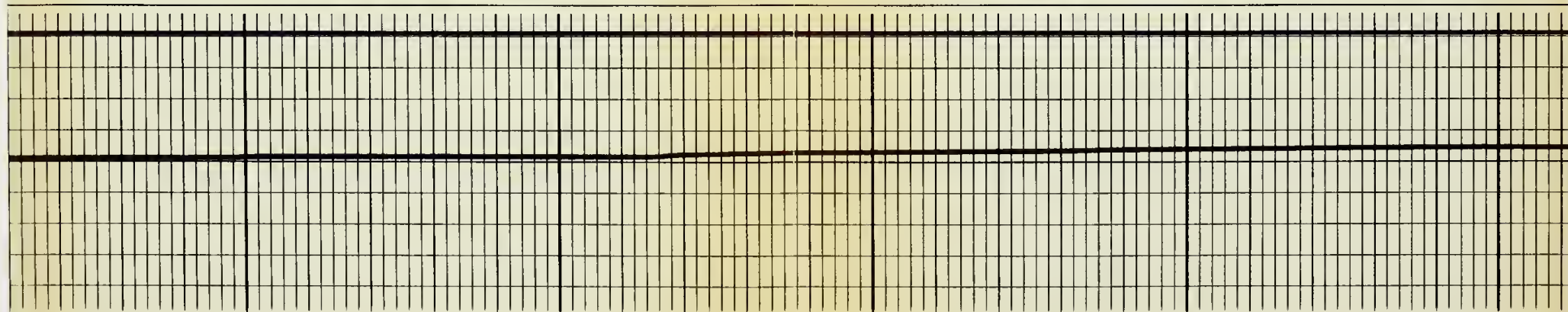
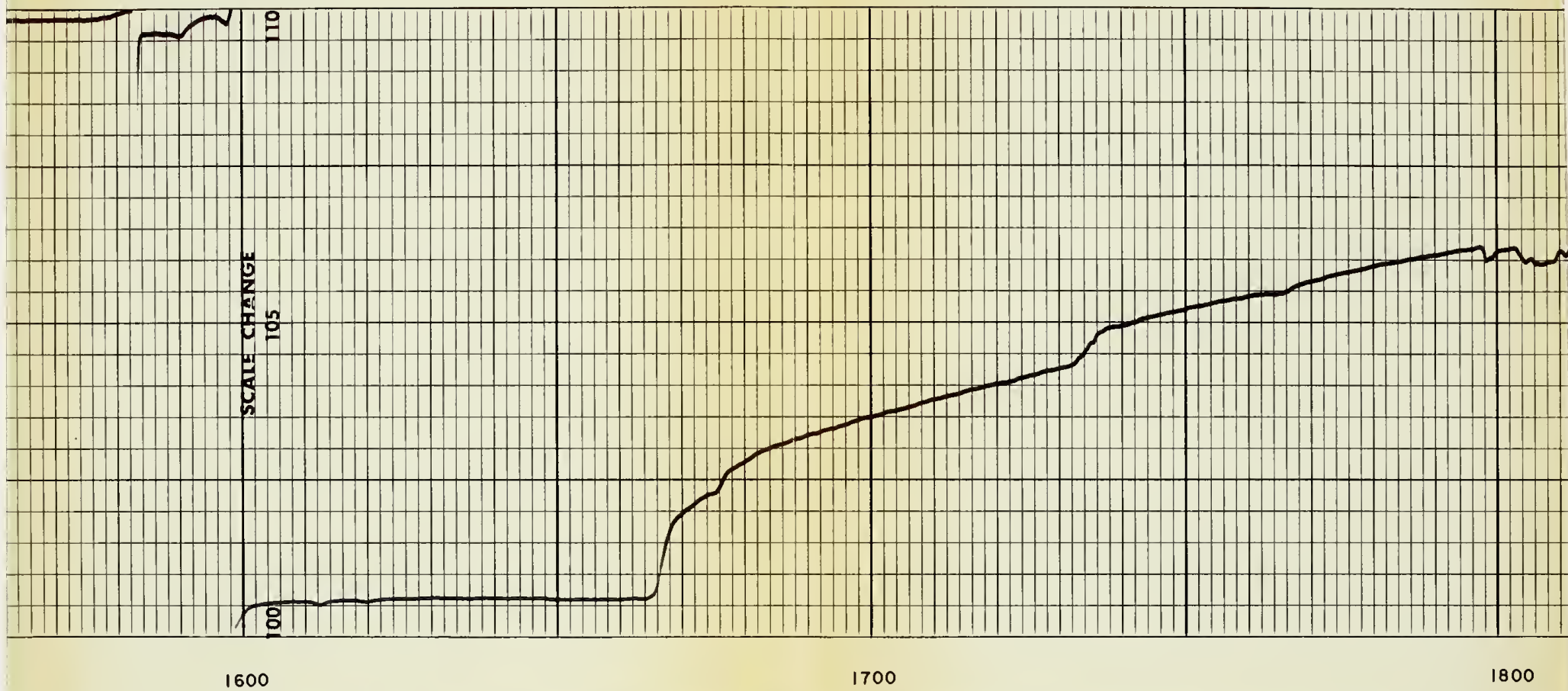


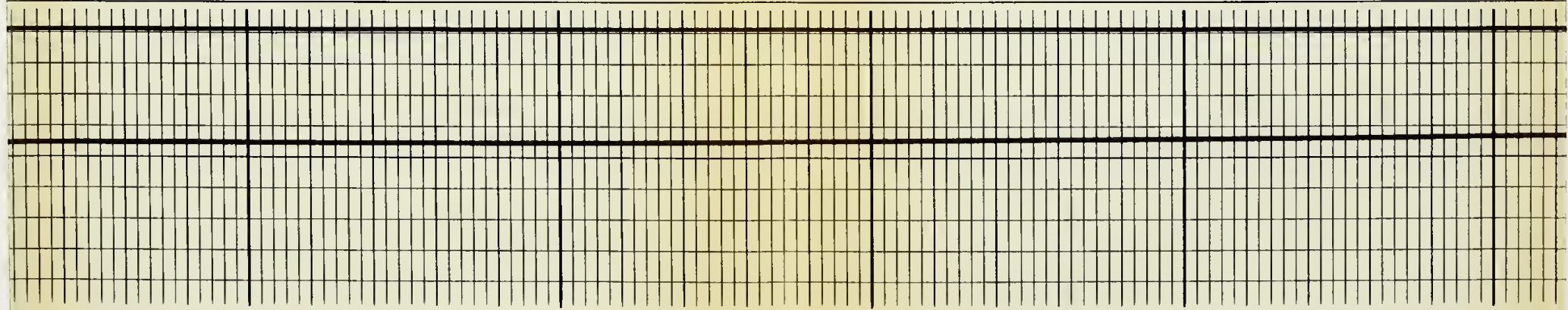
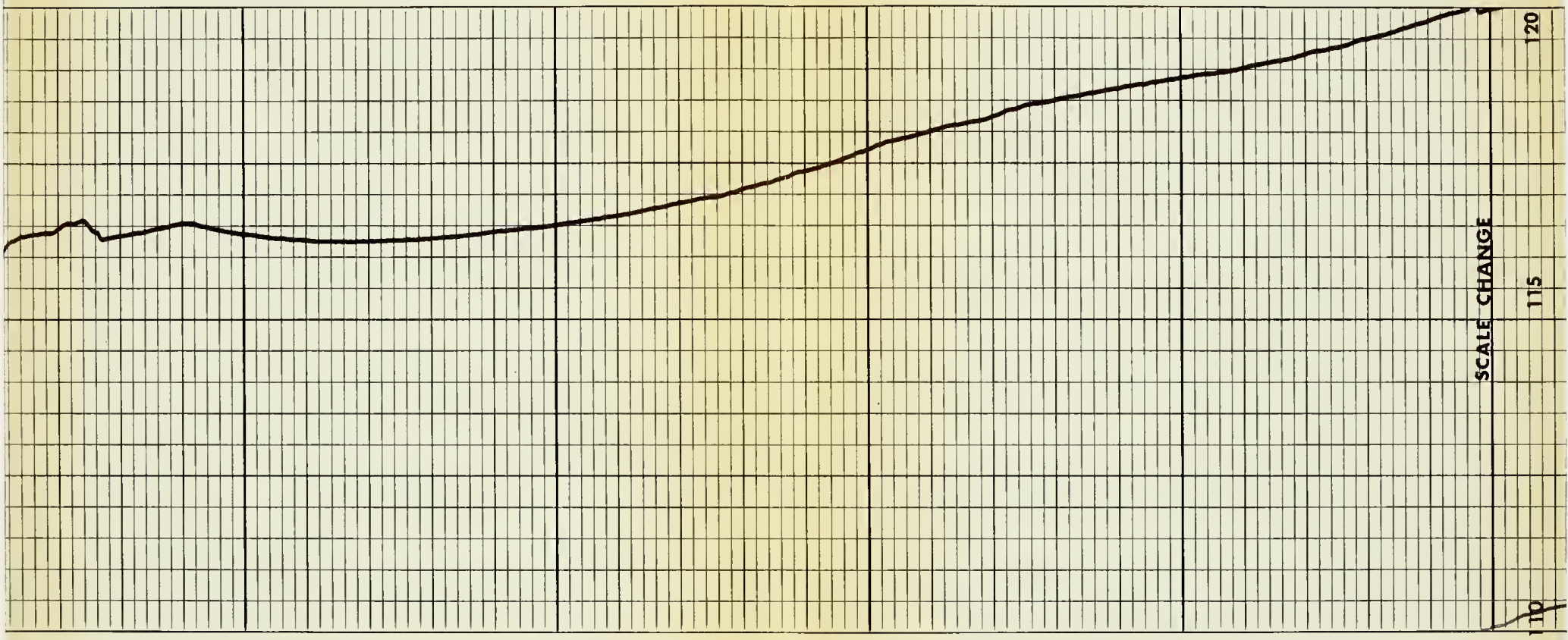
1400

1500

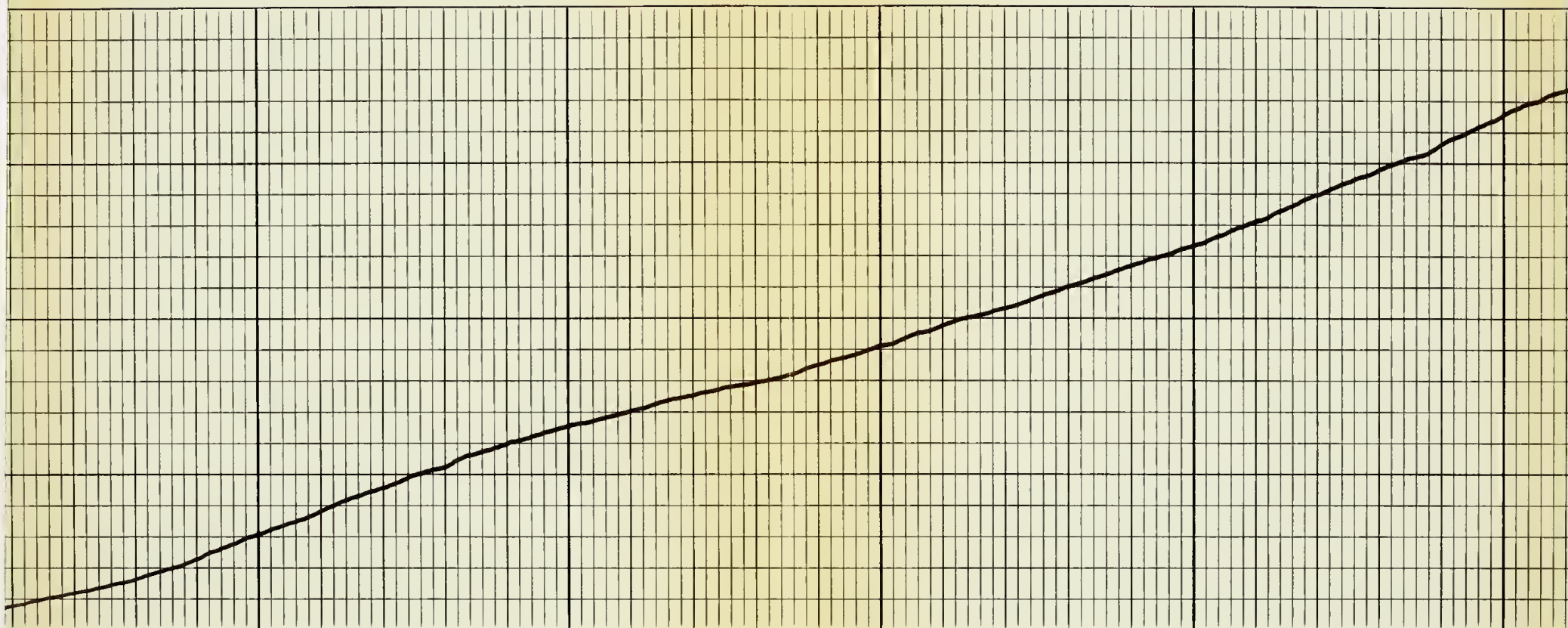








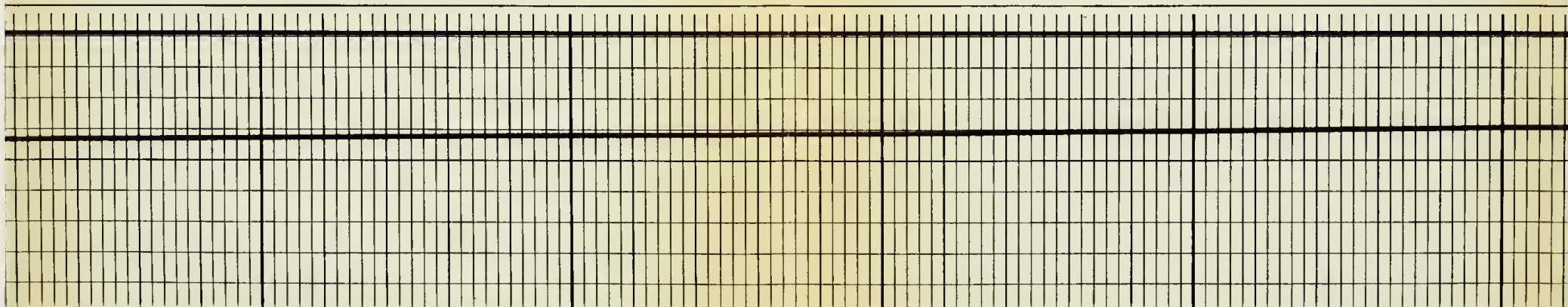




2100

2200

2300



SCALE CHANGE

130

125

120

SCALE CHANGE

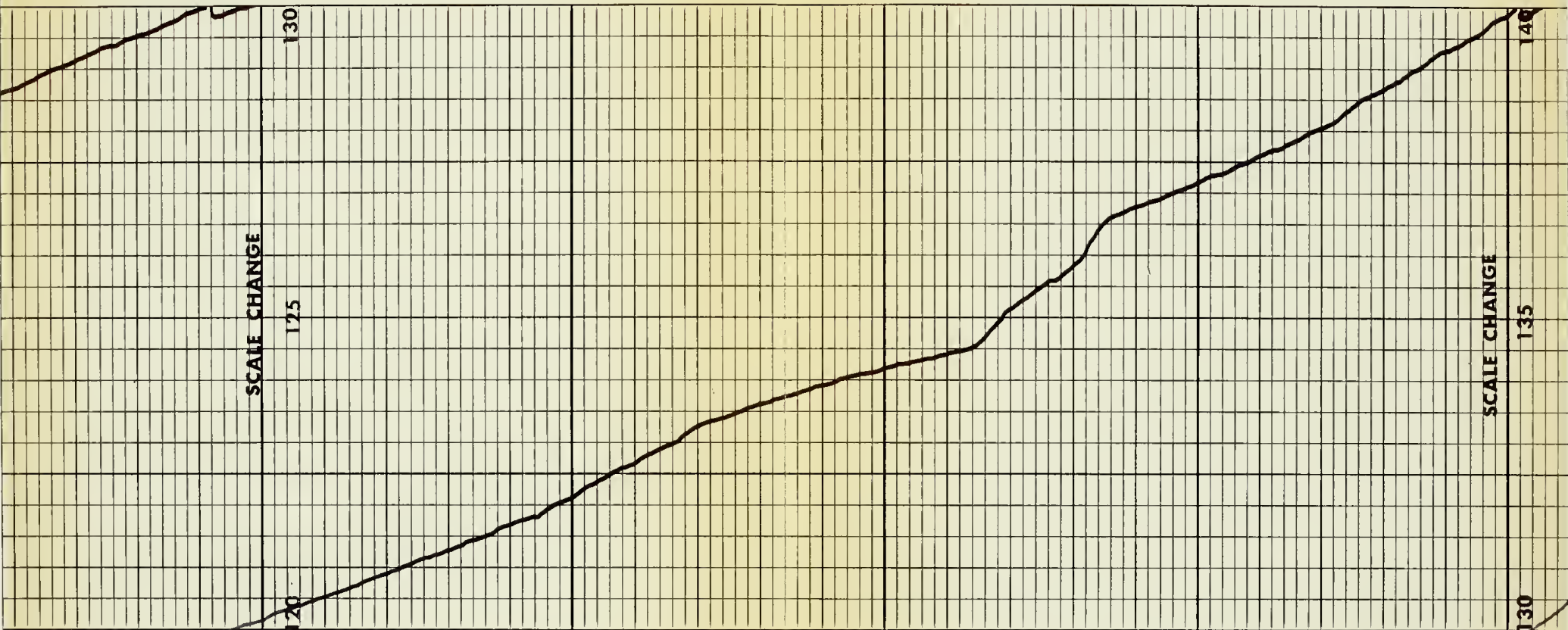
140

135

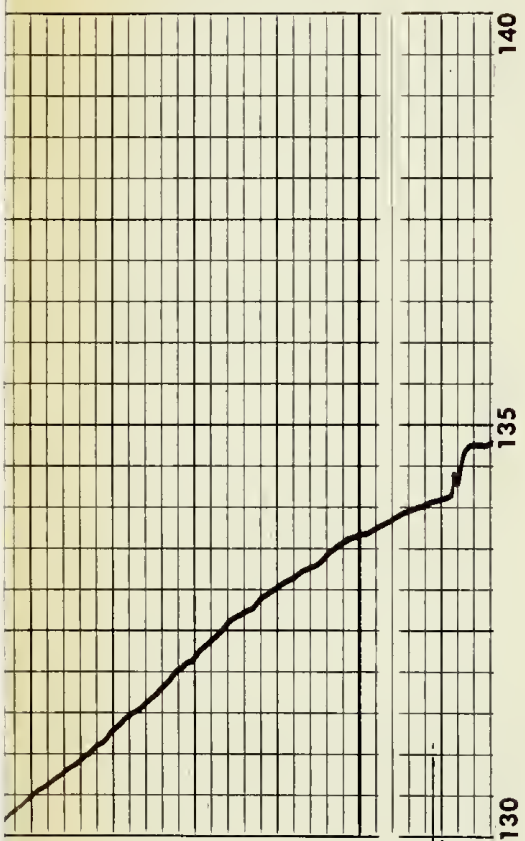
130

2400

2500



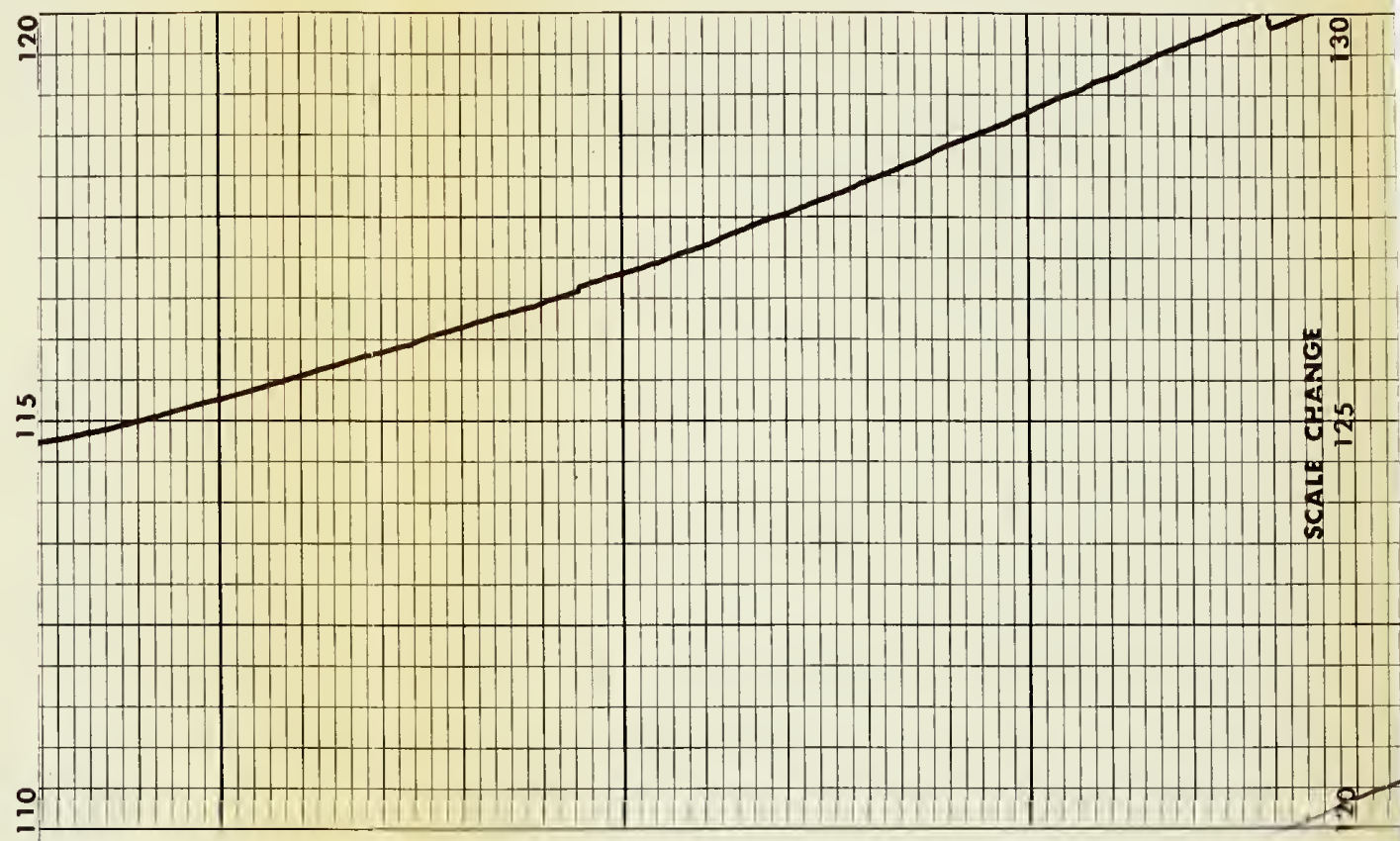




2600

Run 1

SCALE CHANGE



Run 1

2200

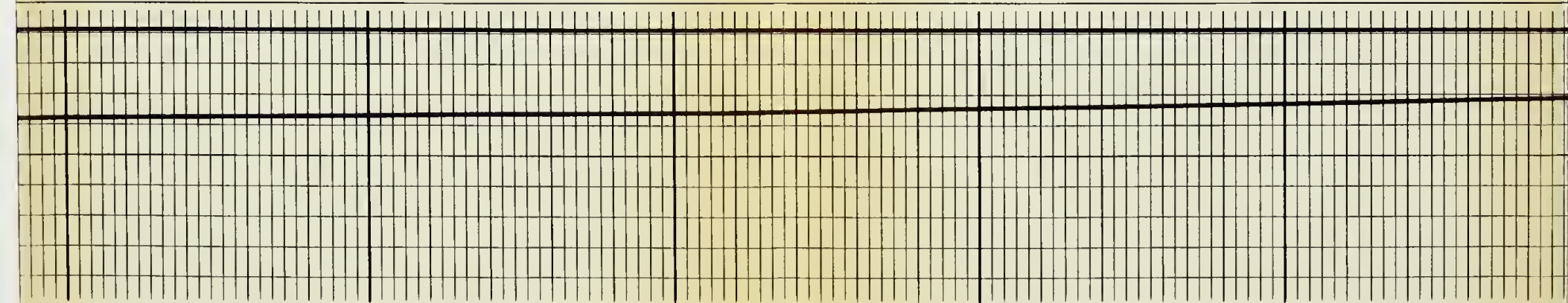
2300

SCALE CHANGE

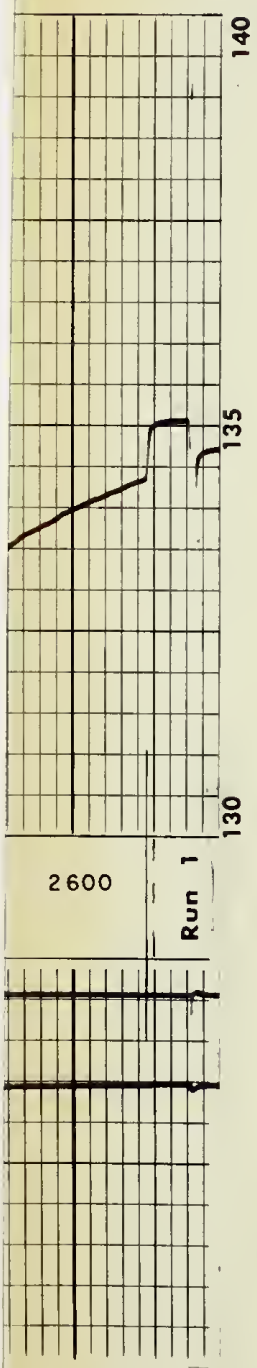
125

120

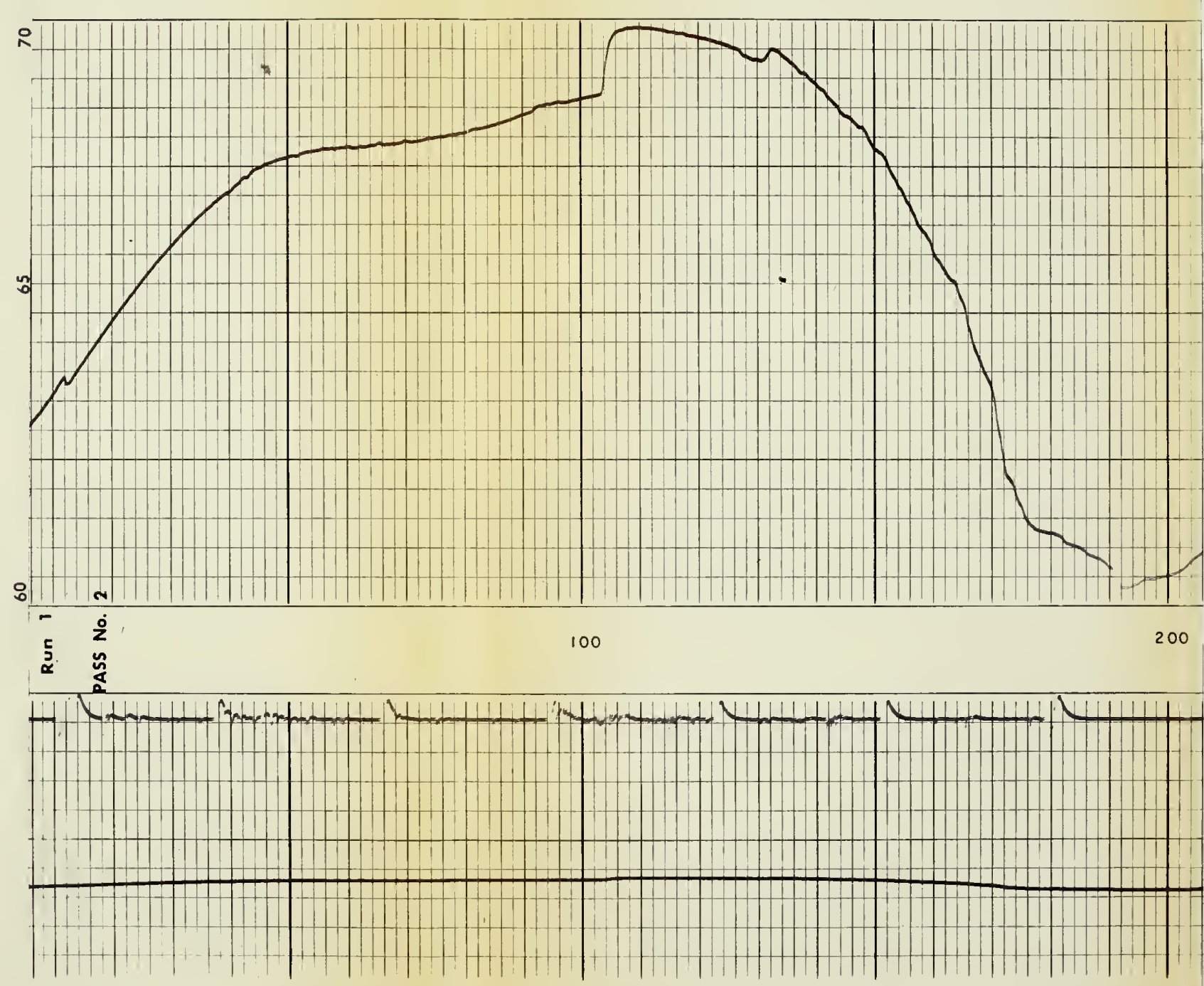
130

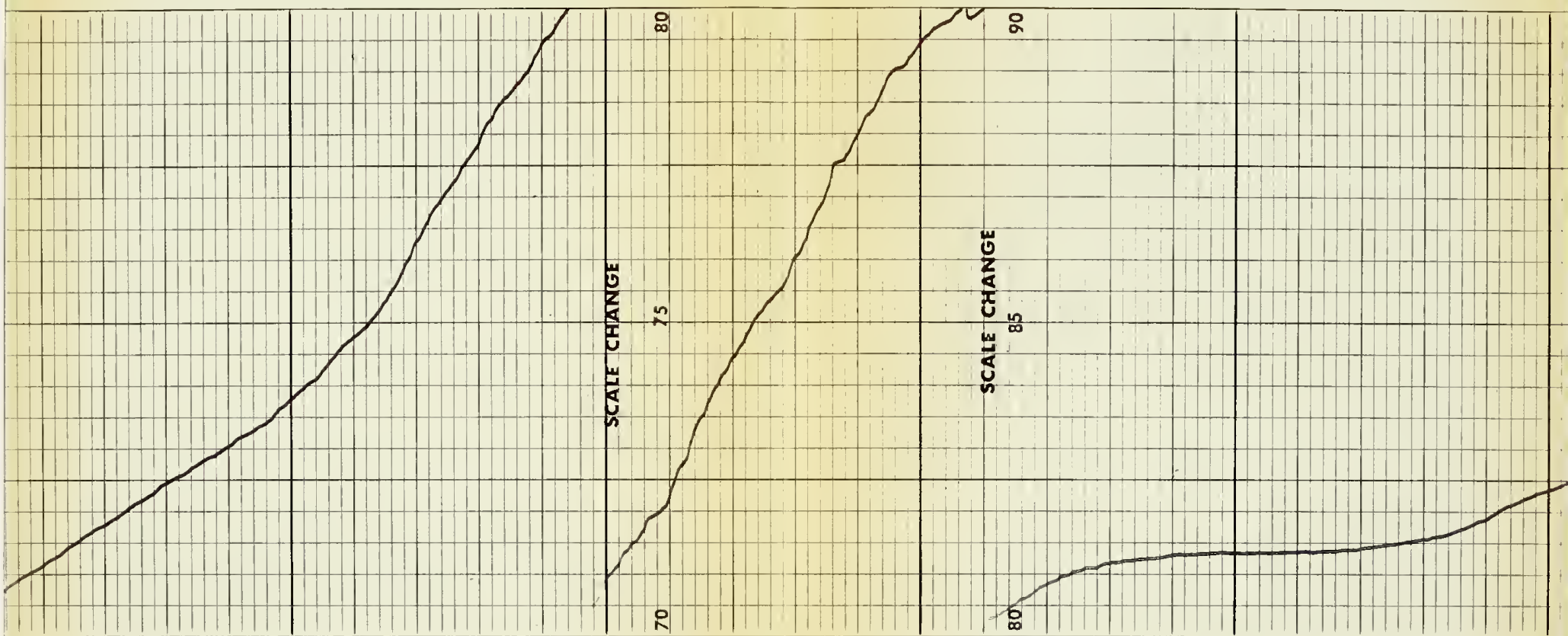






SCALE CHANGE

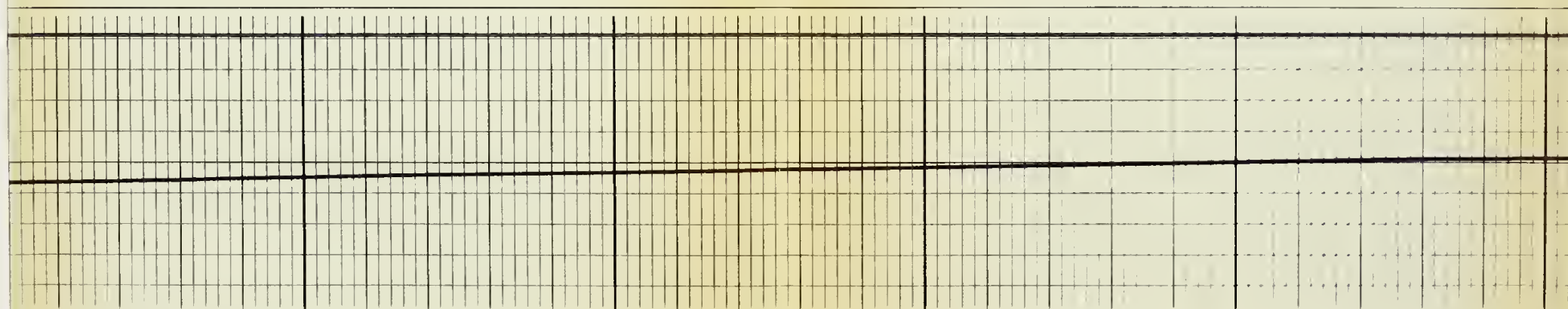
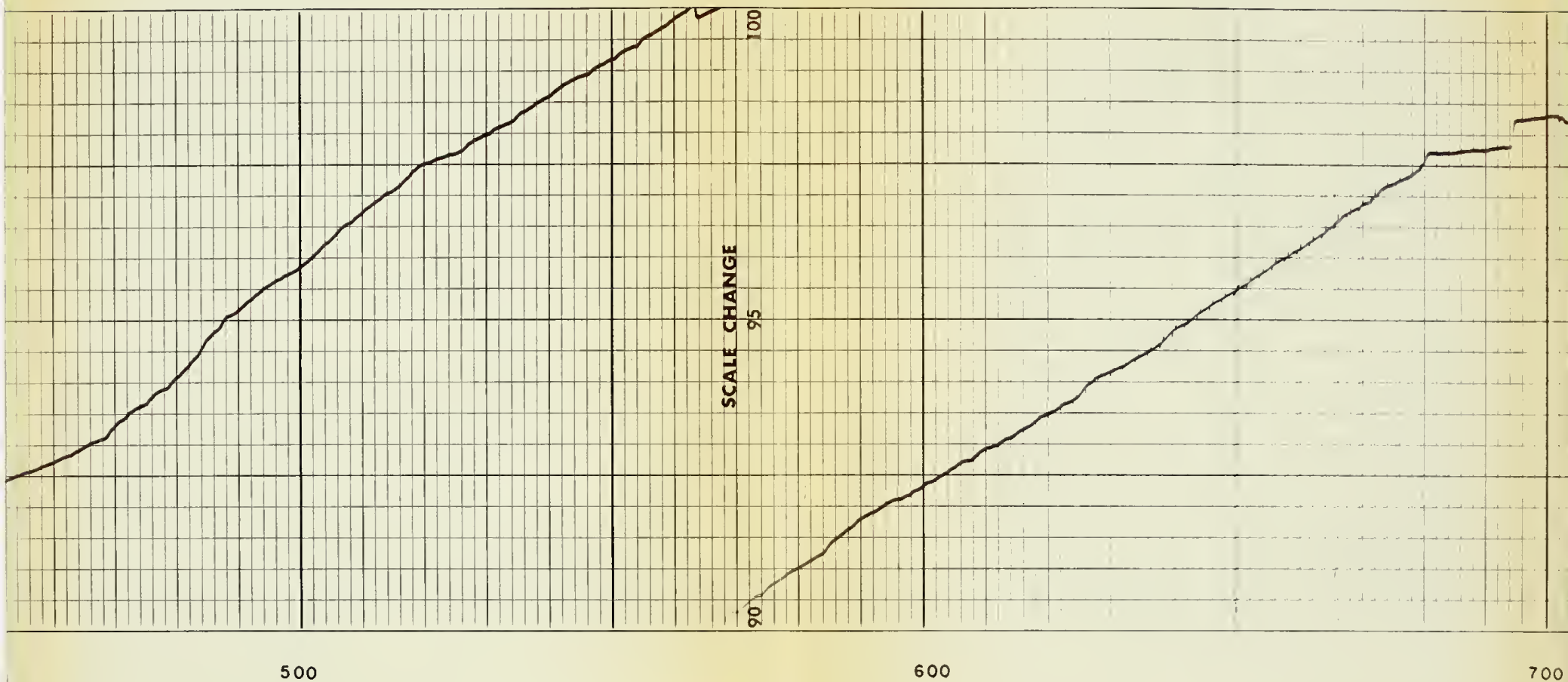


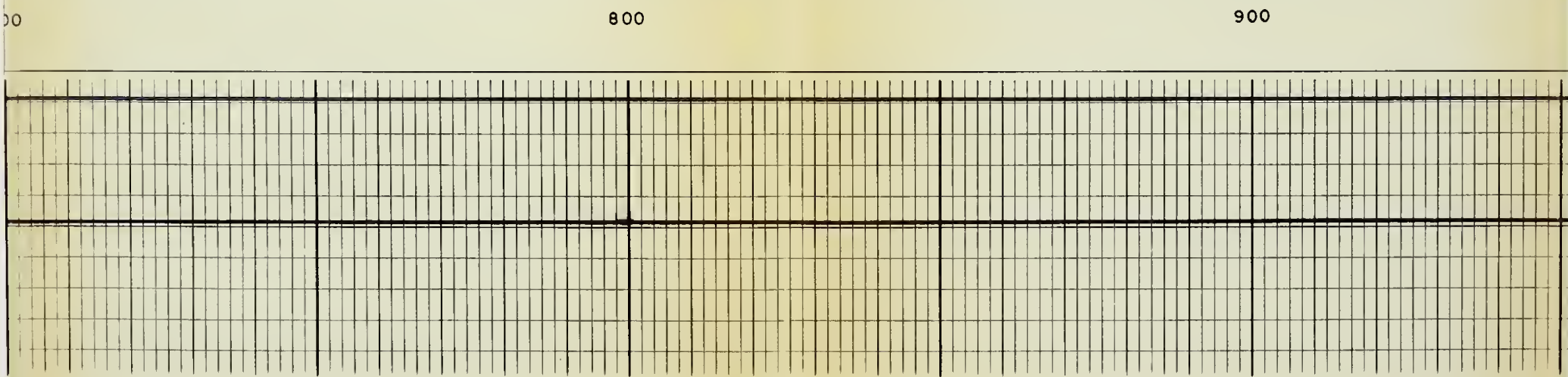
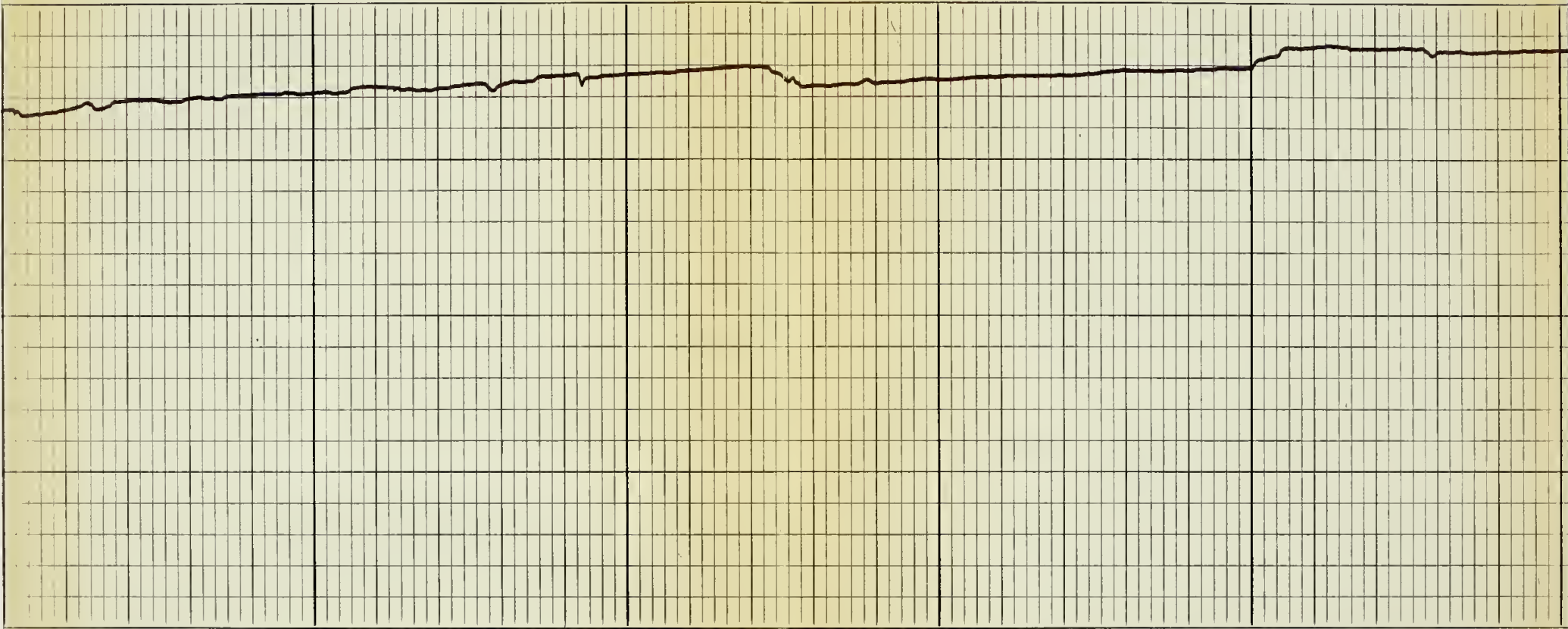


300

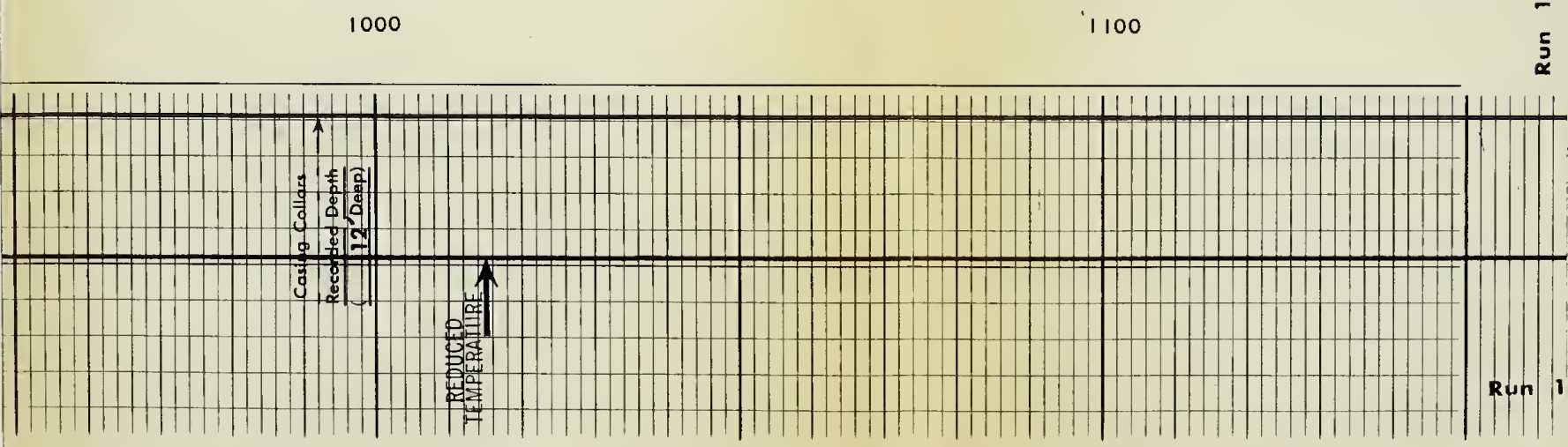
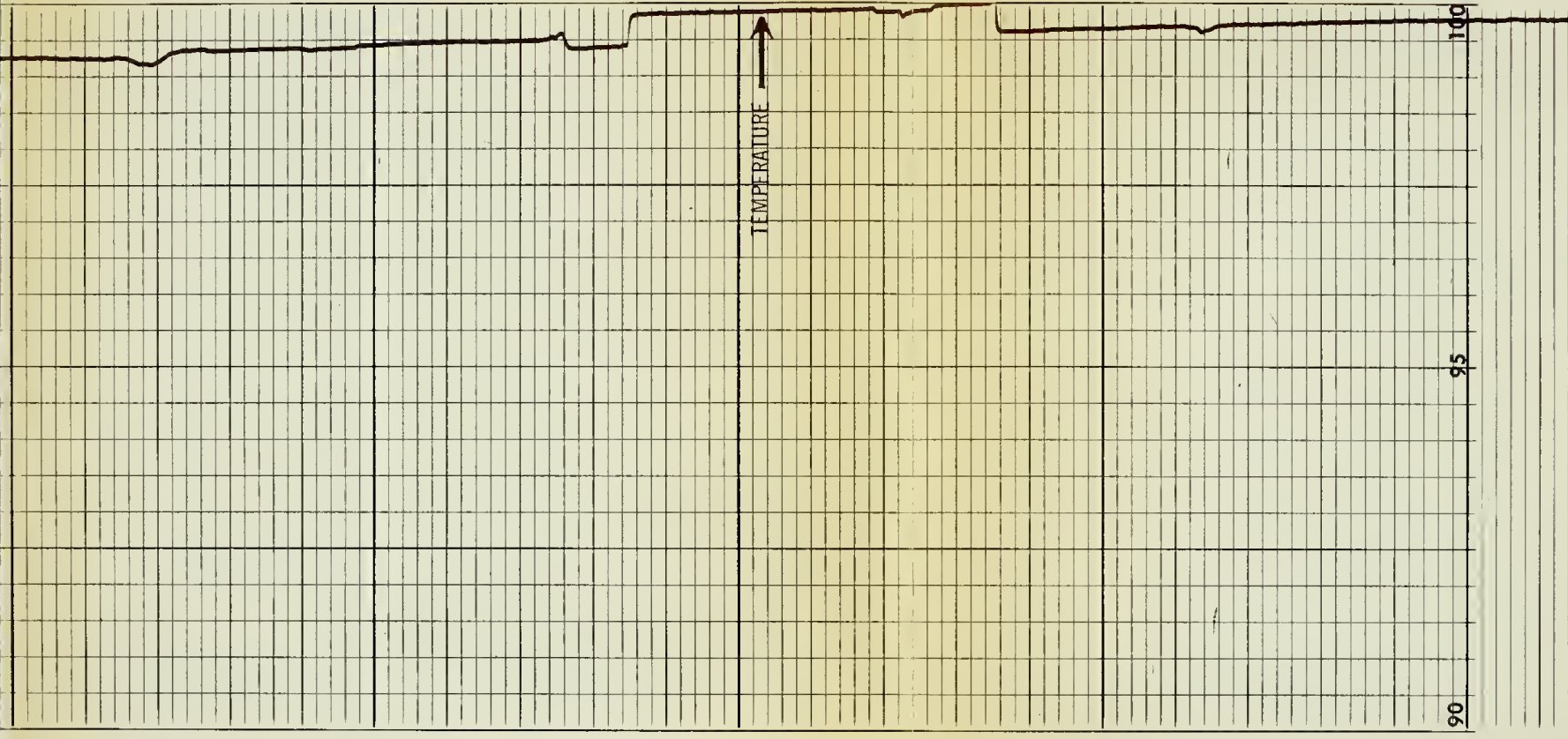
400





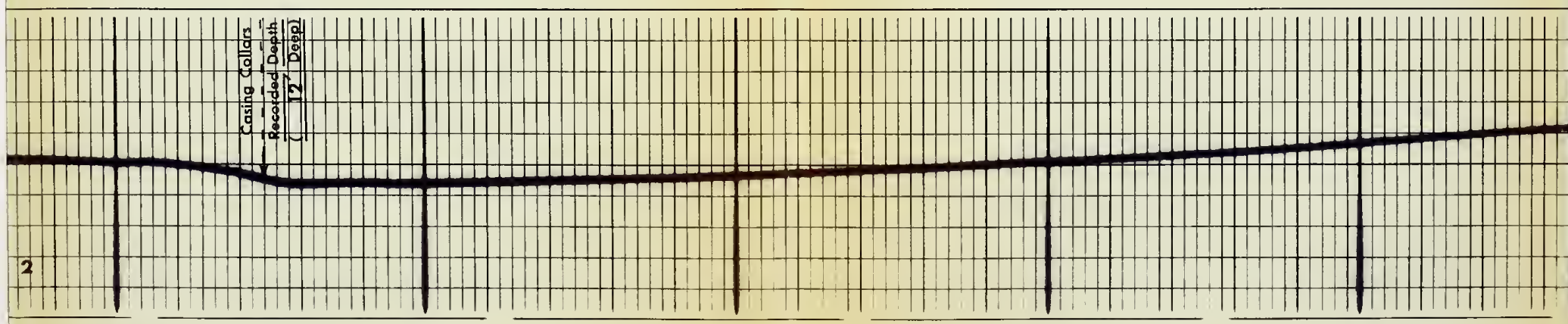




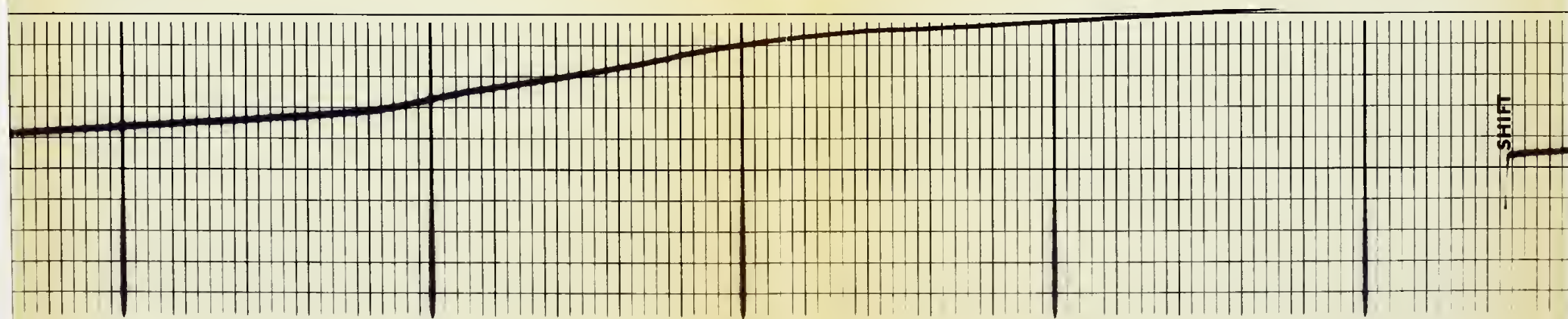
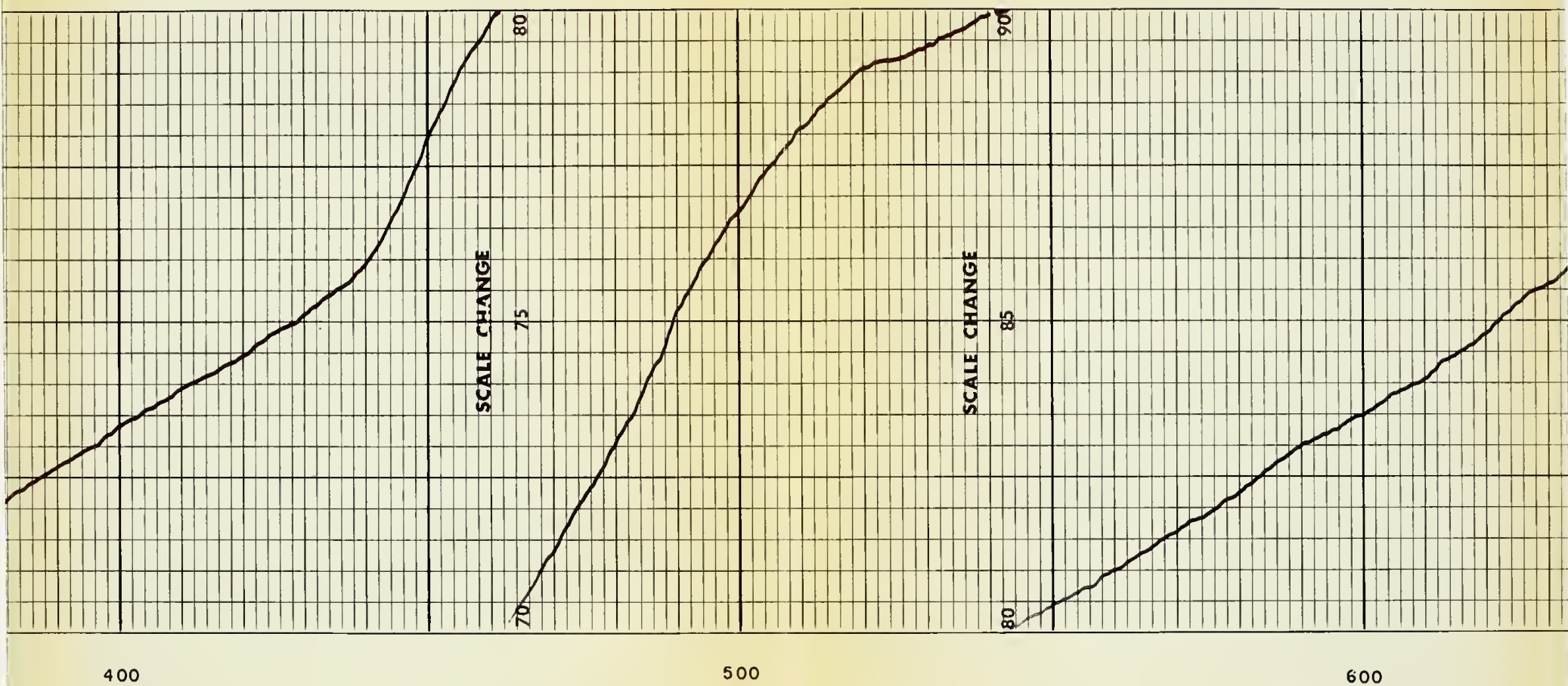


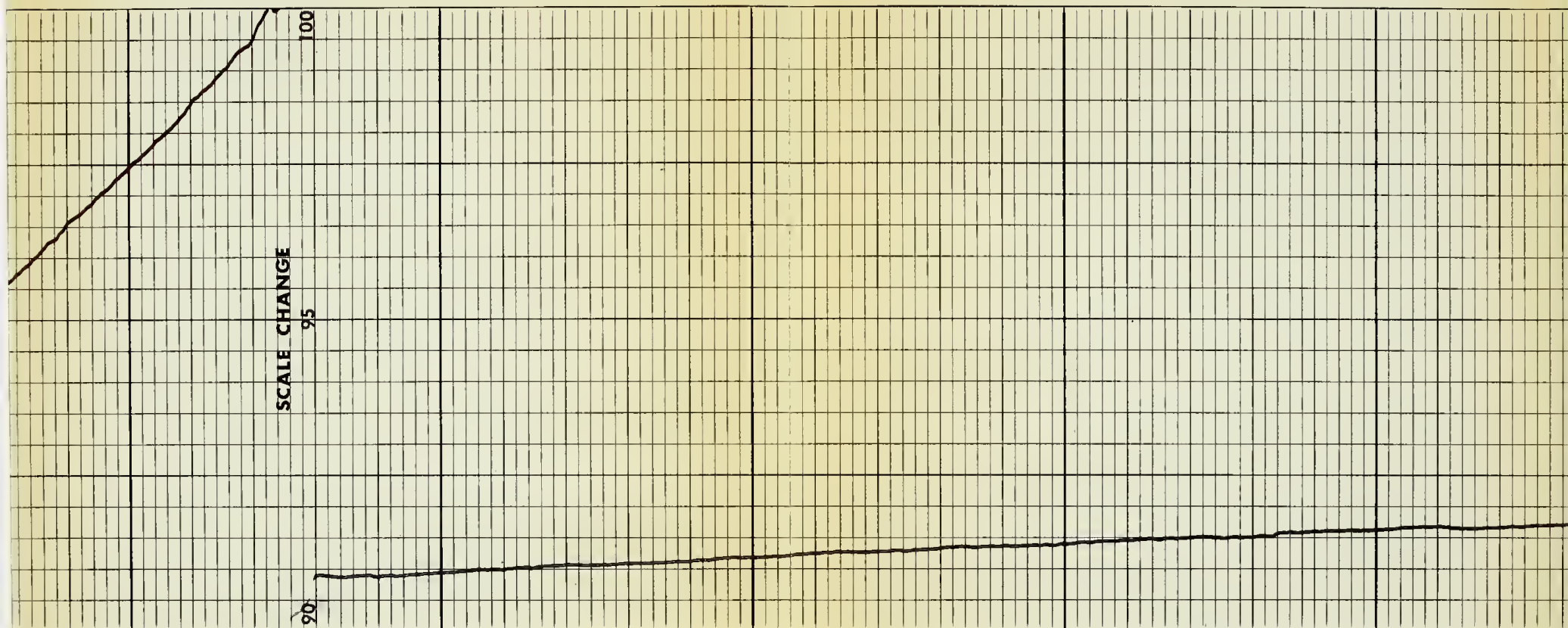
SCALE CHANGE





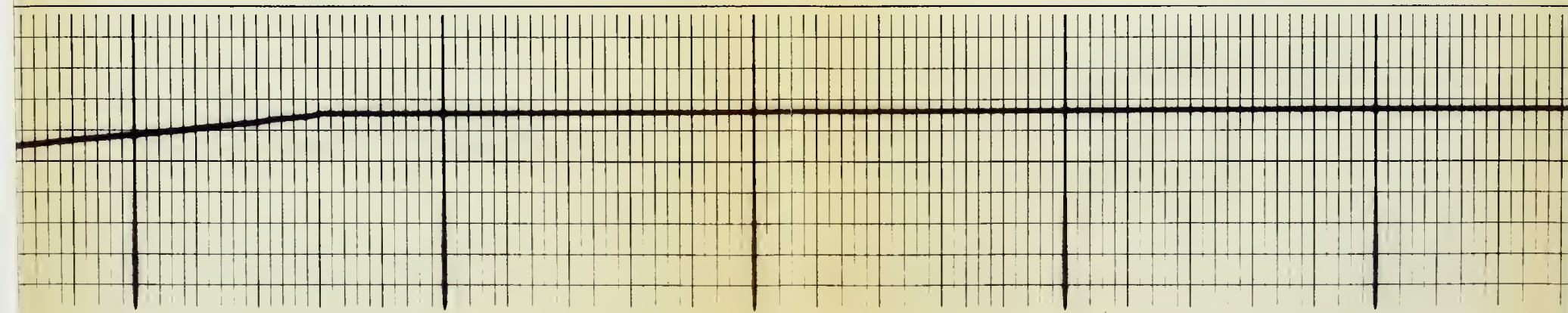




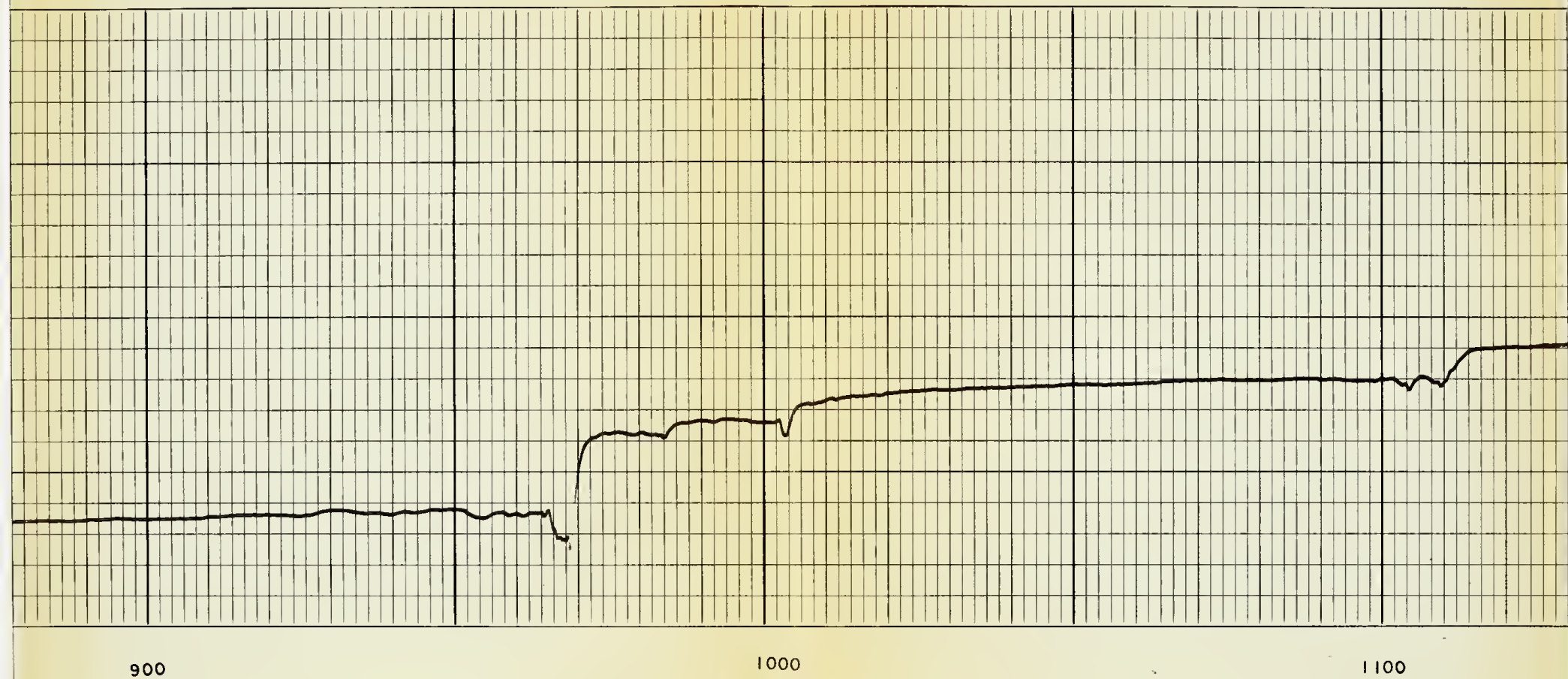


700

800



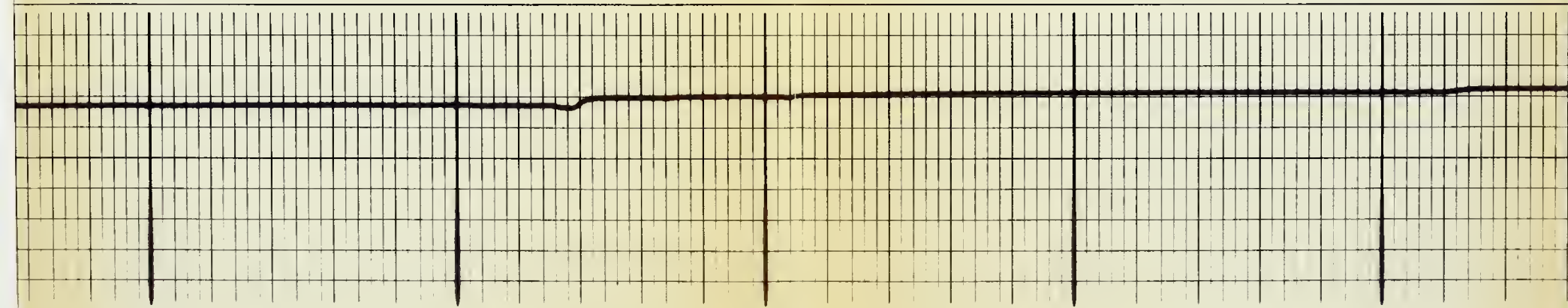


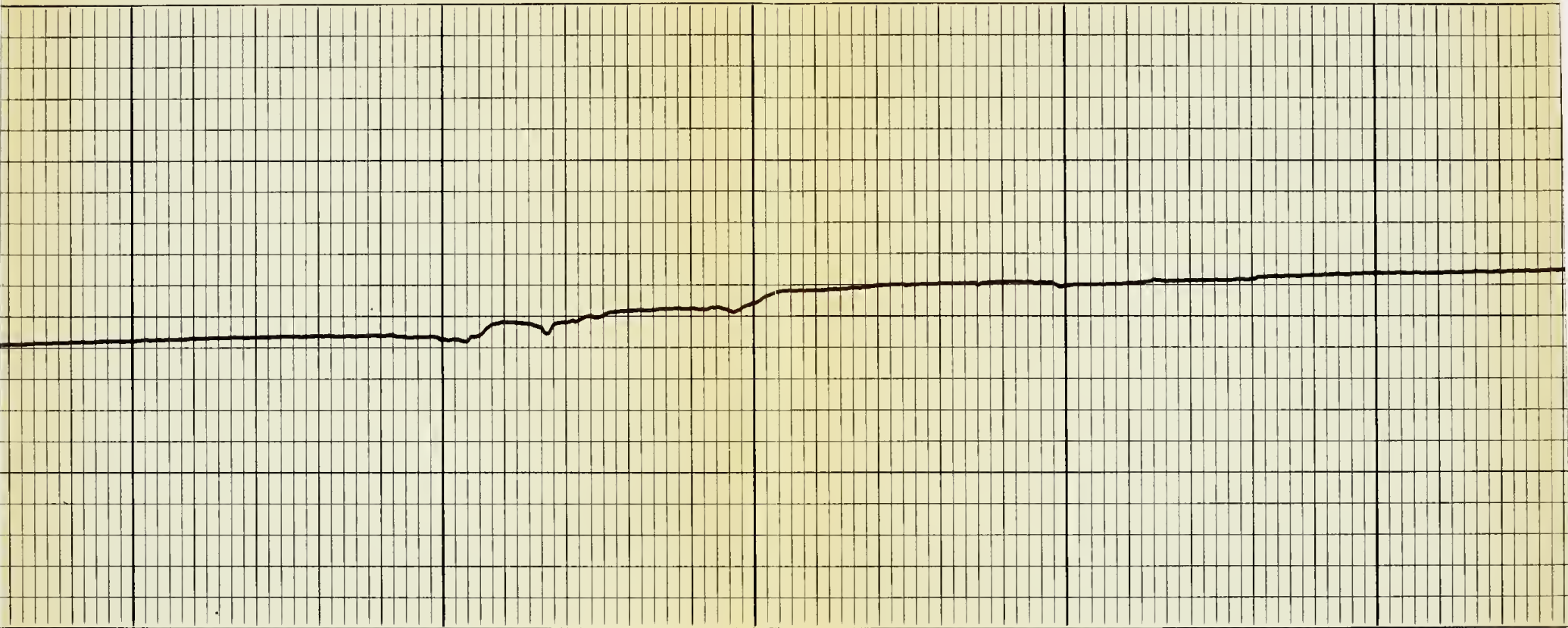


900

1000

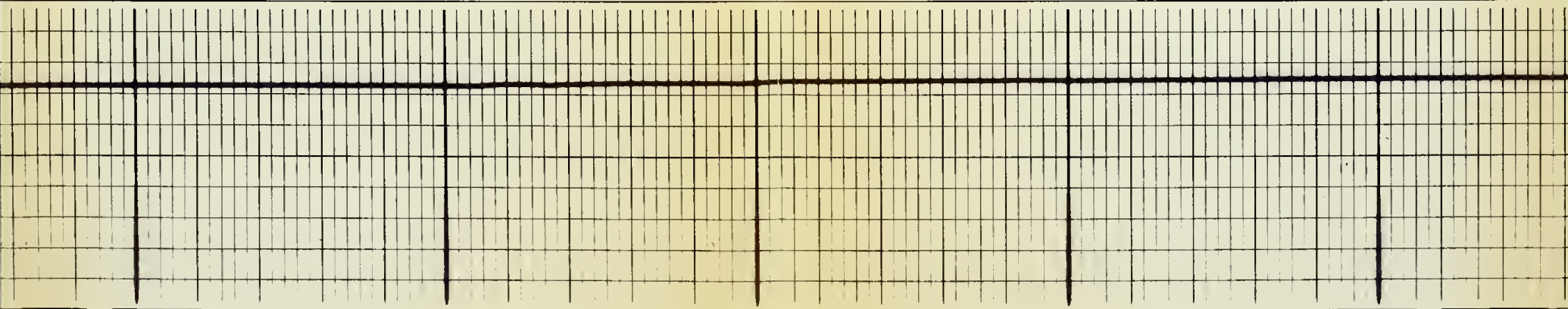
1100



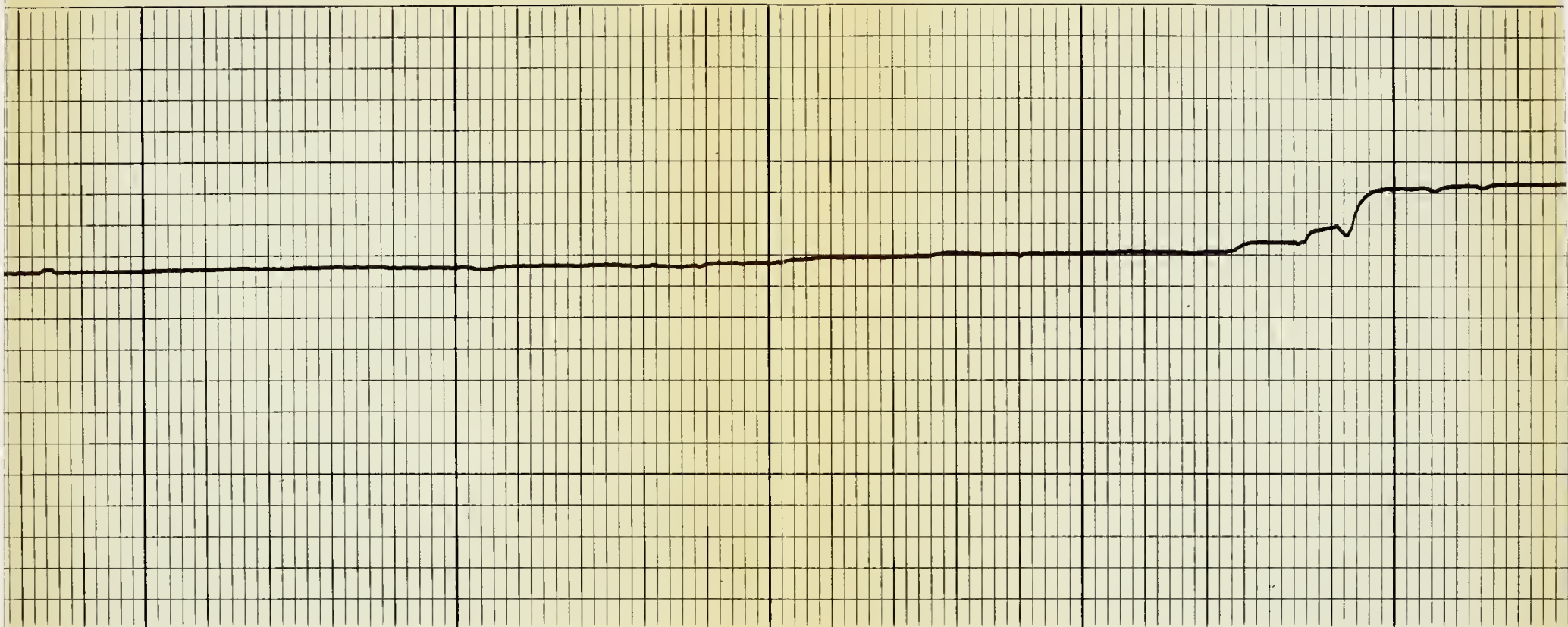


1200

1300



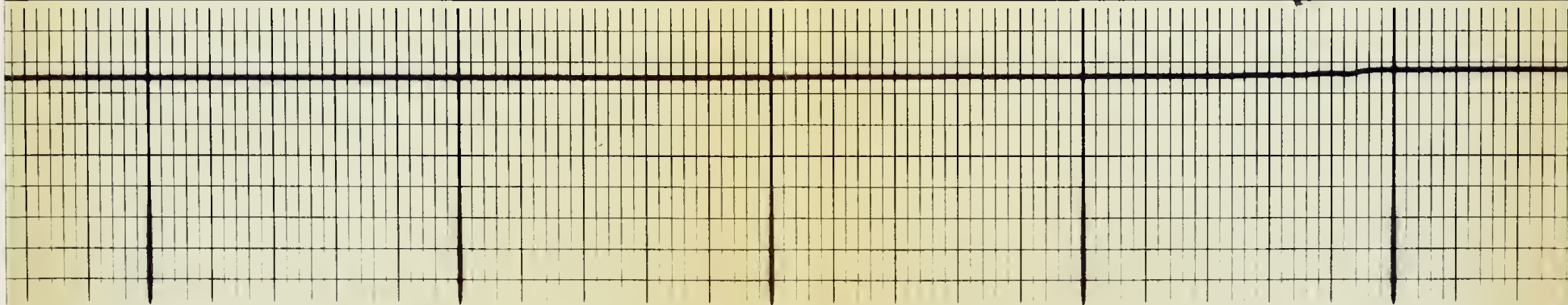


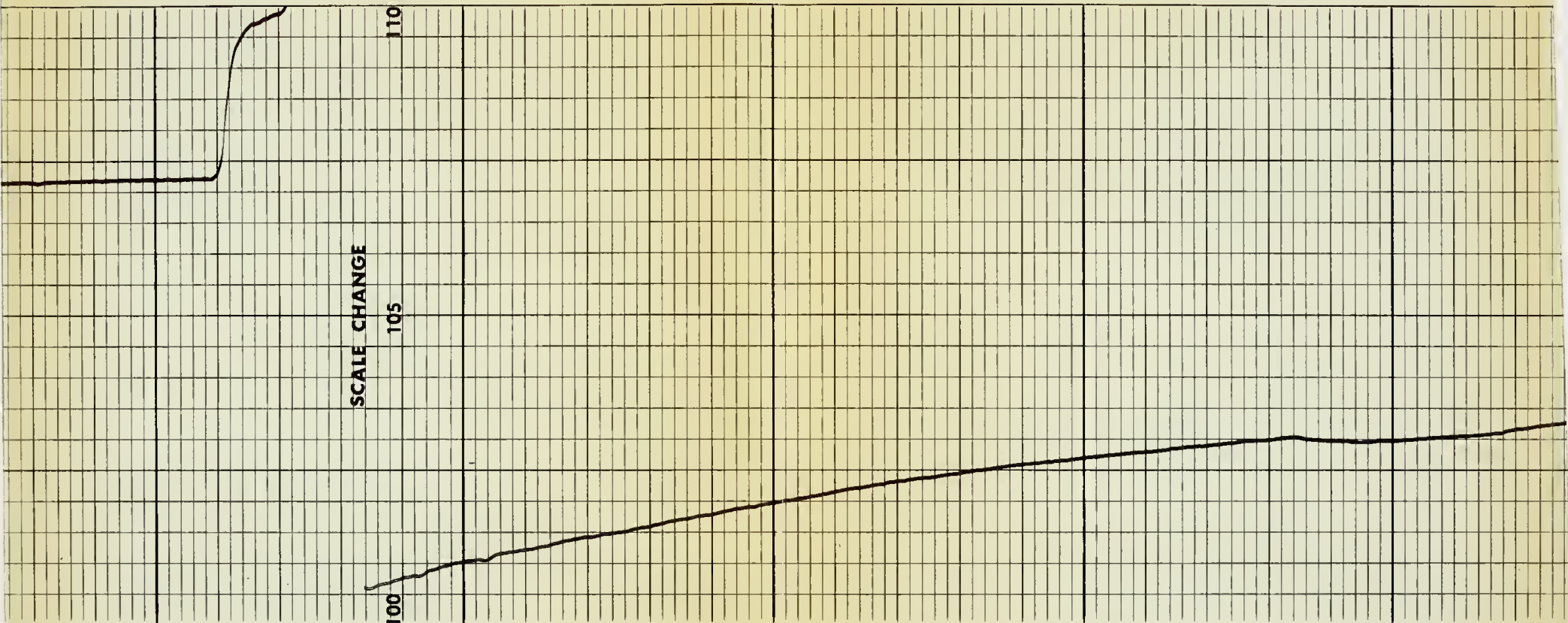


1400

1500

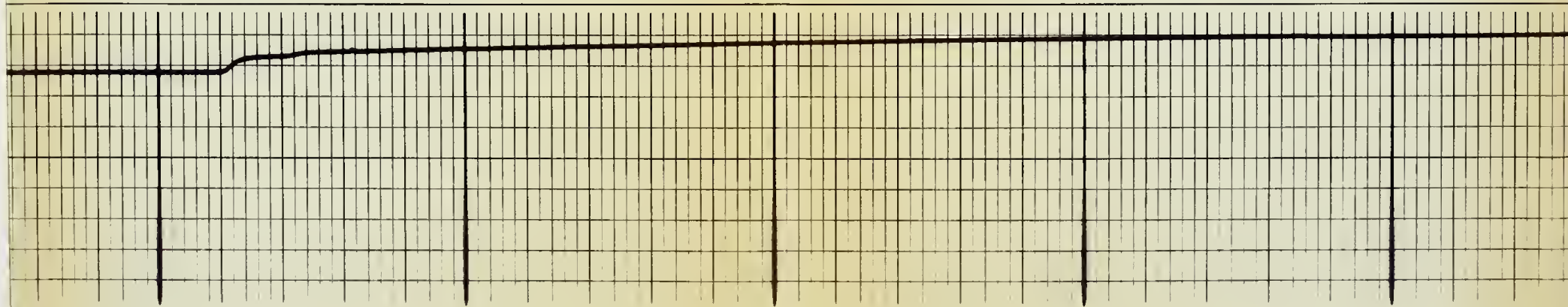
1600



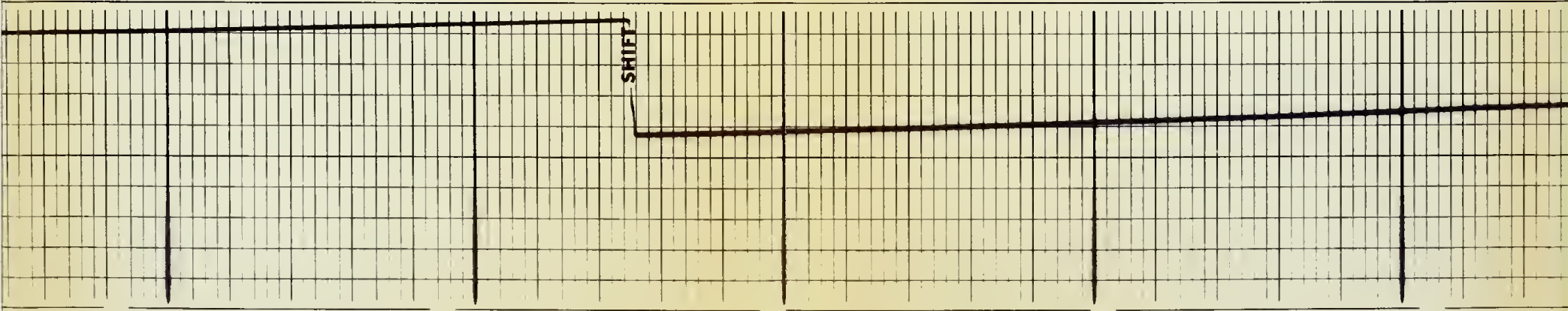
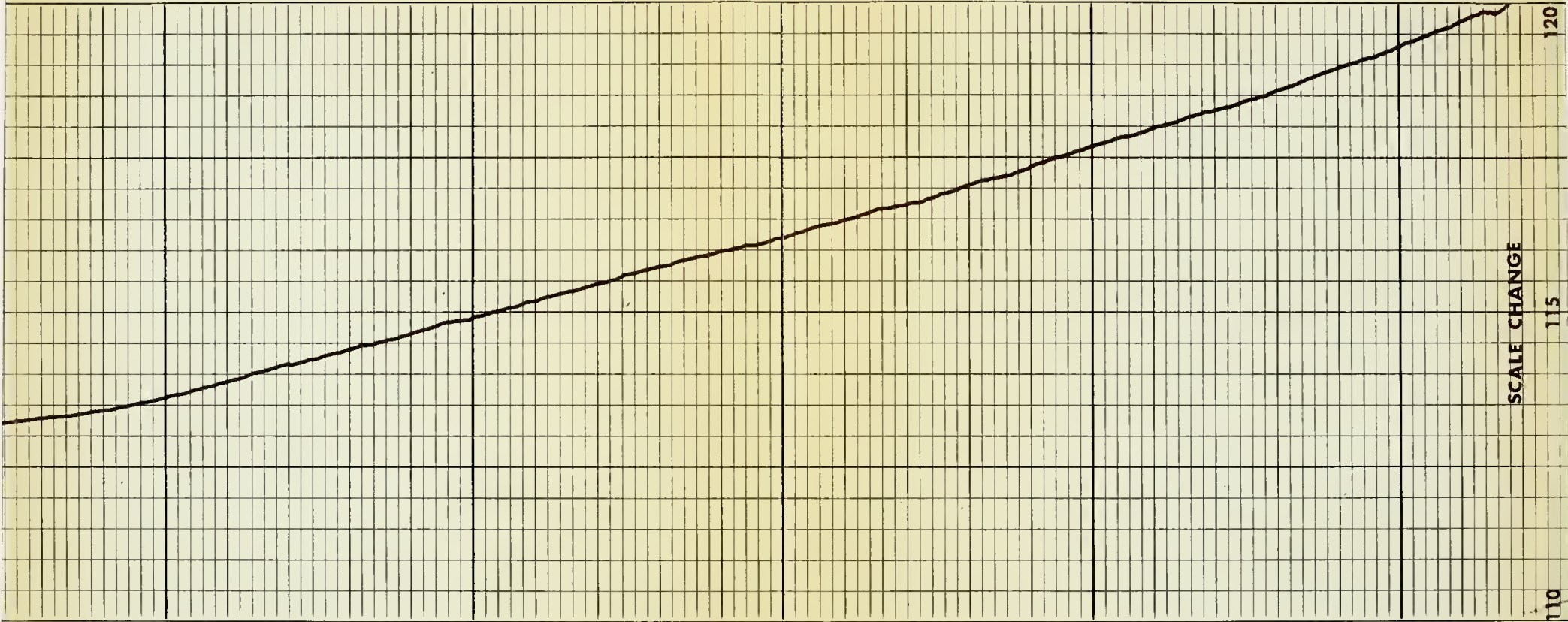


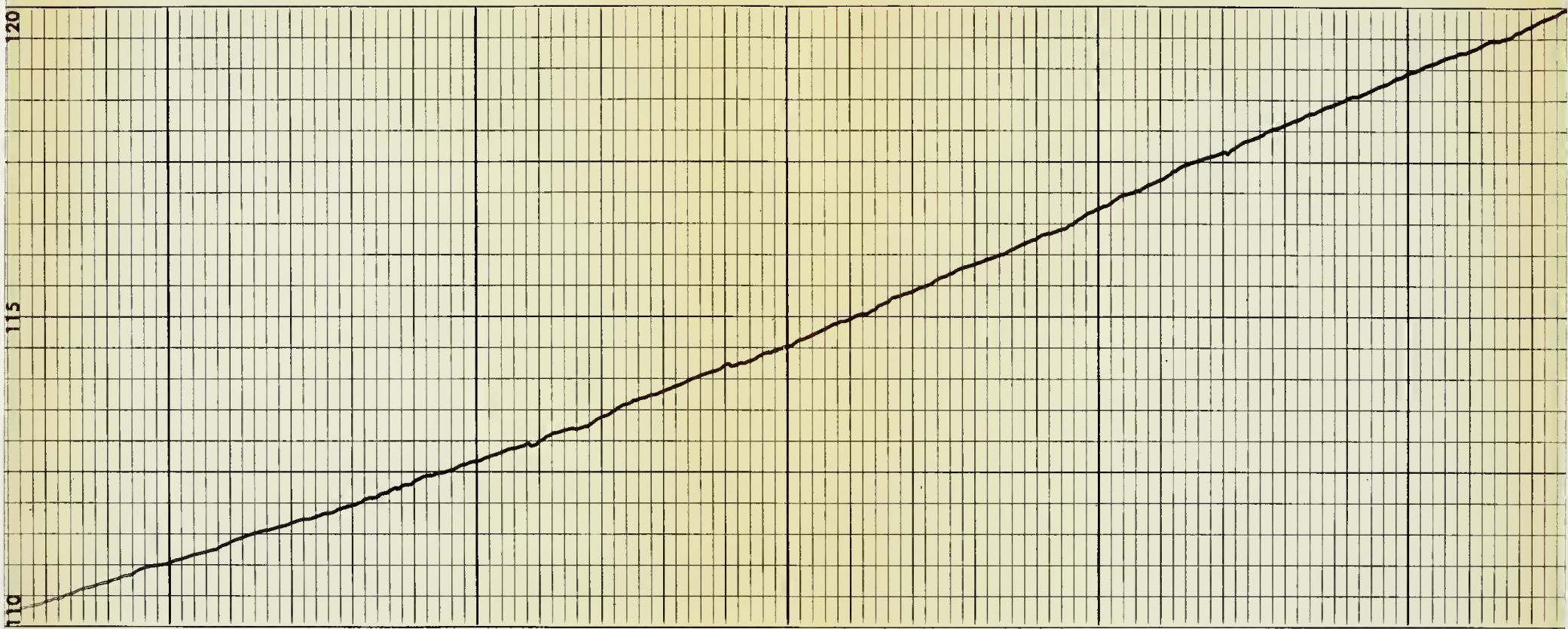
1700

1800



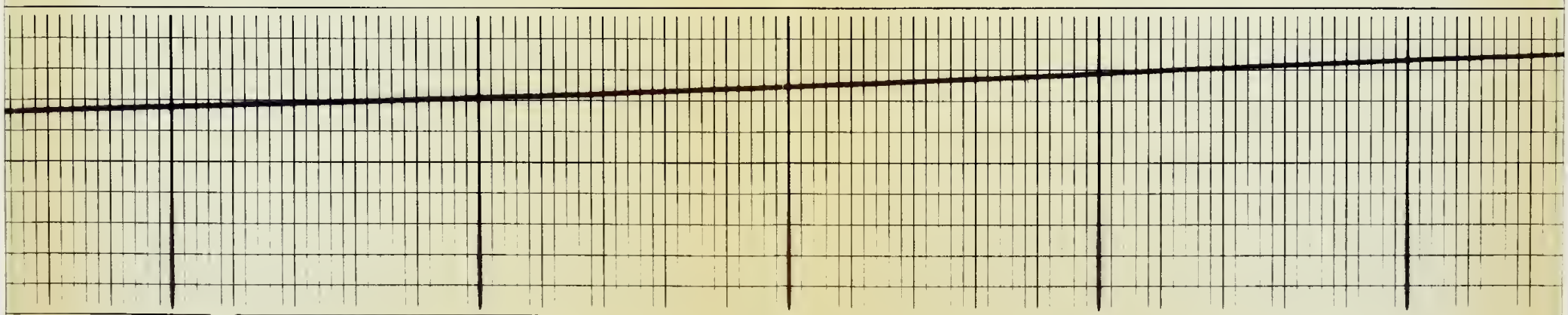




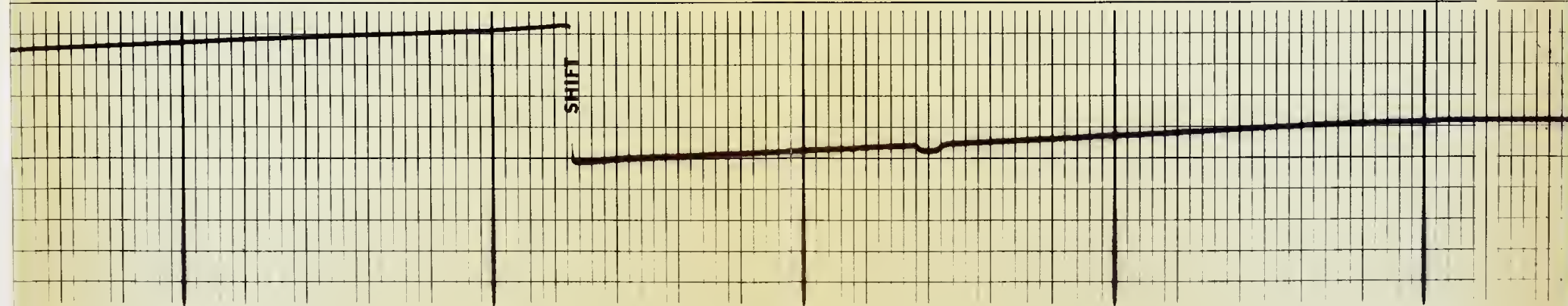


2200

2300





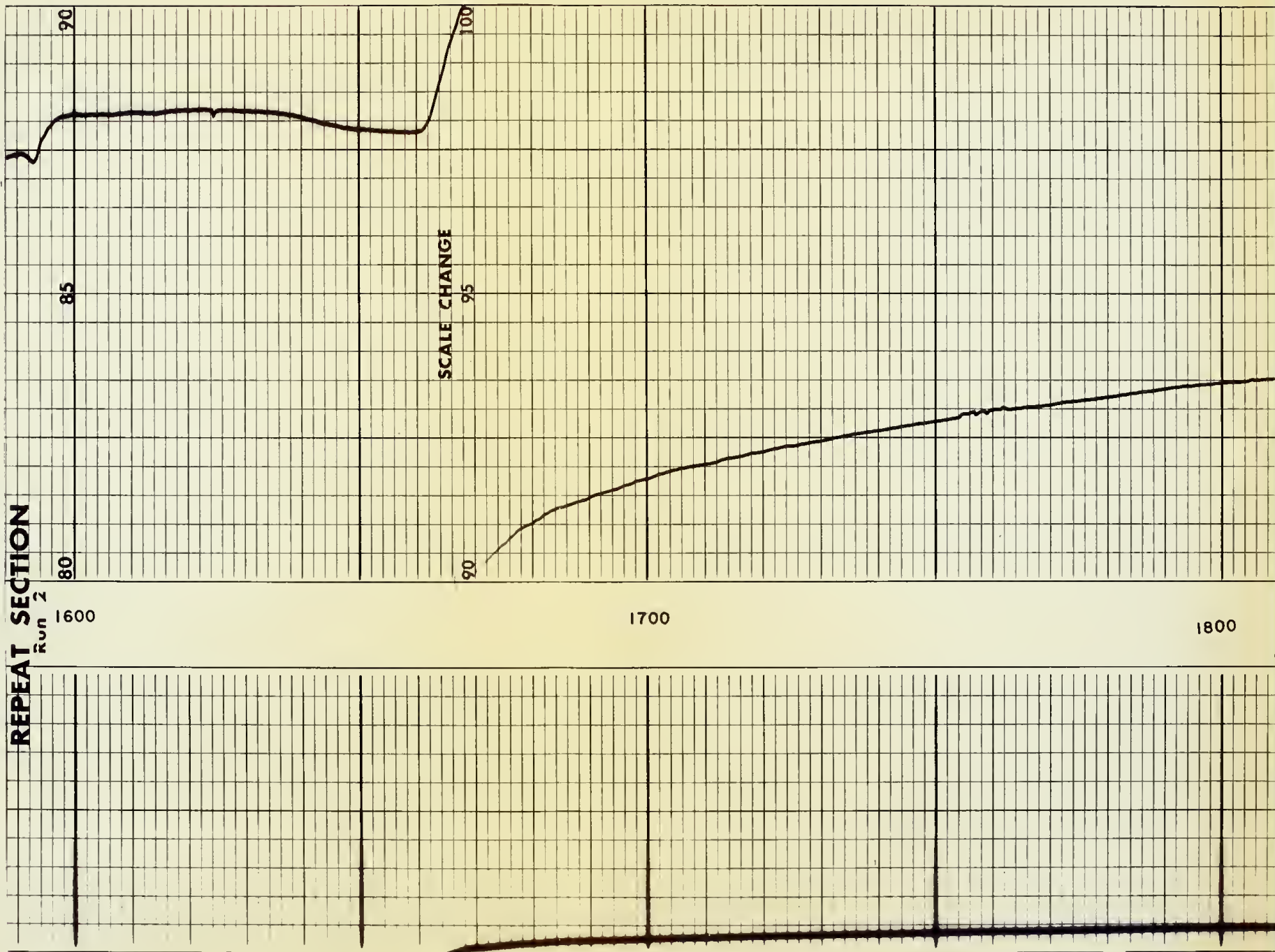


SCALE CHANGE

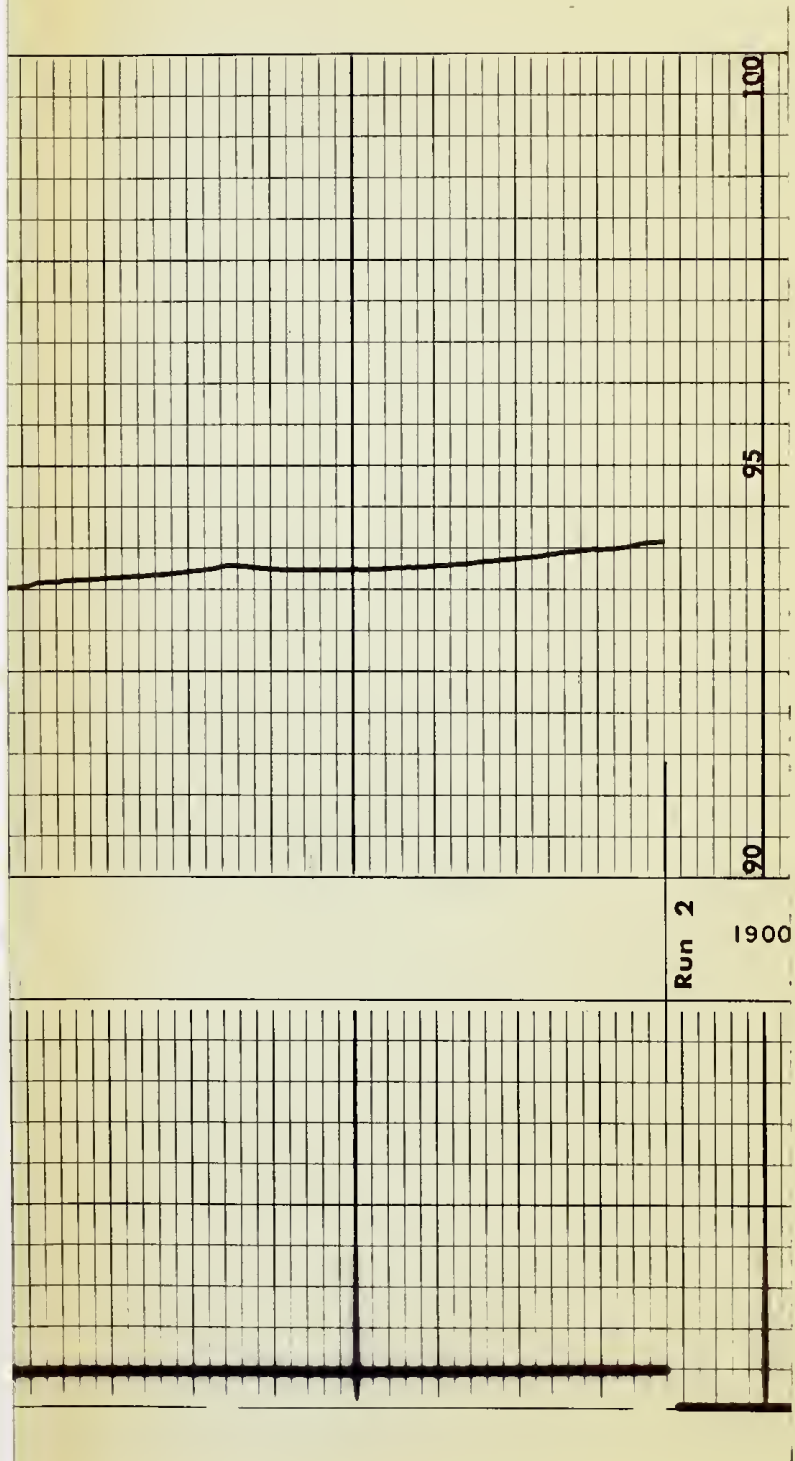
REPEAT SECTION

Run 2

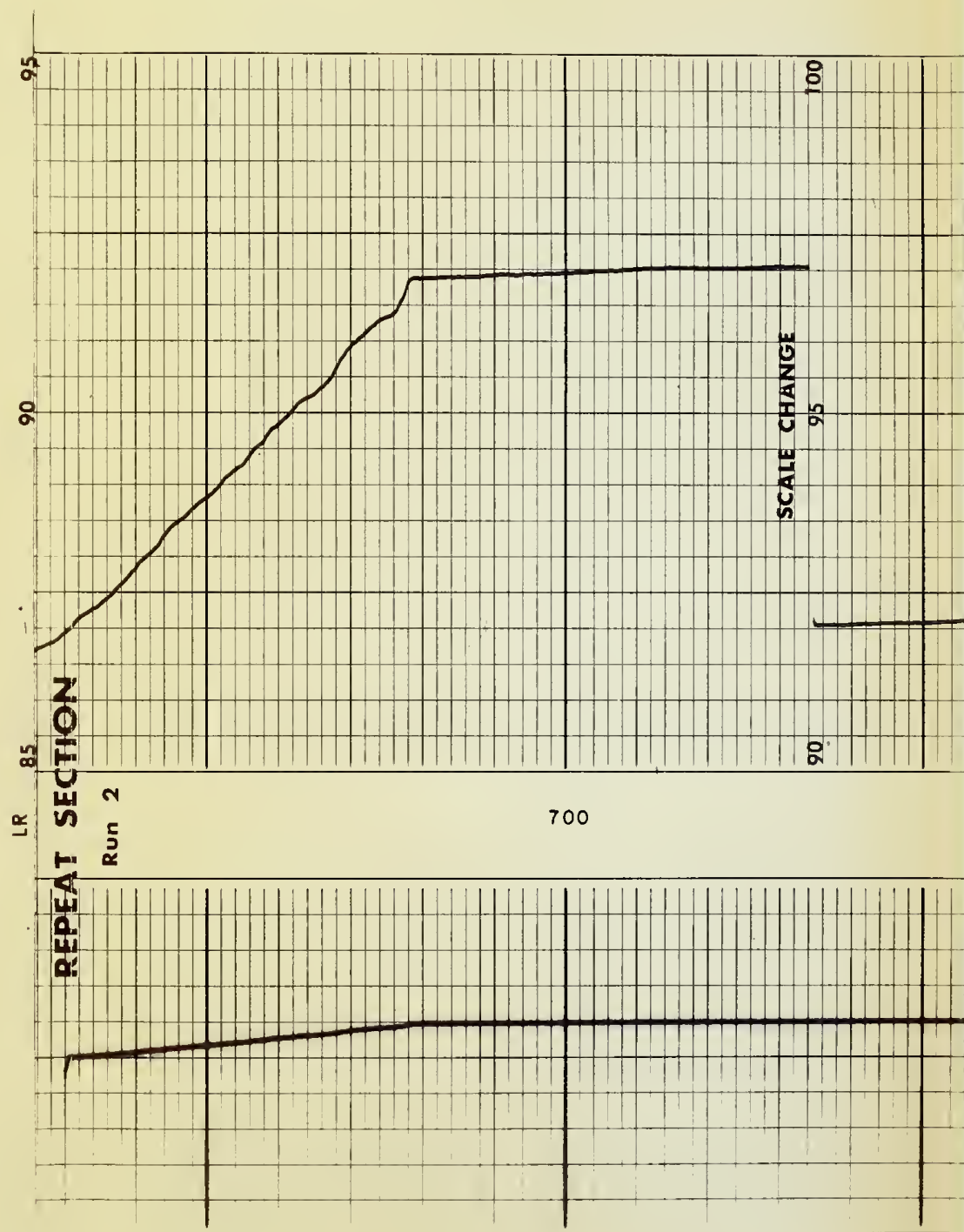
1600

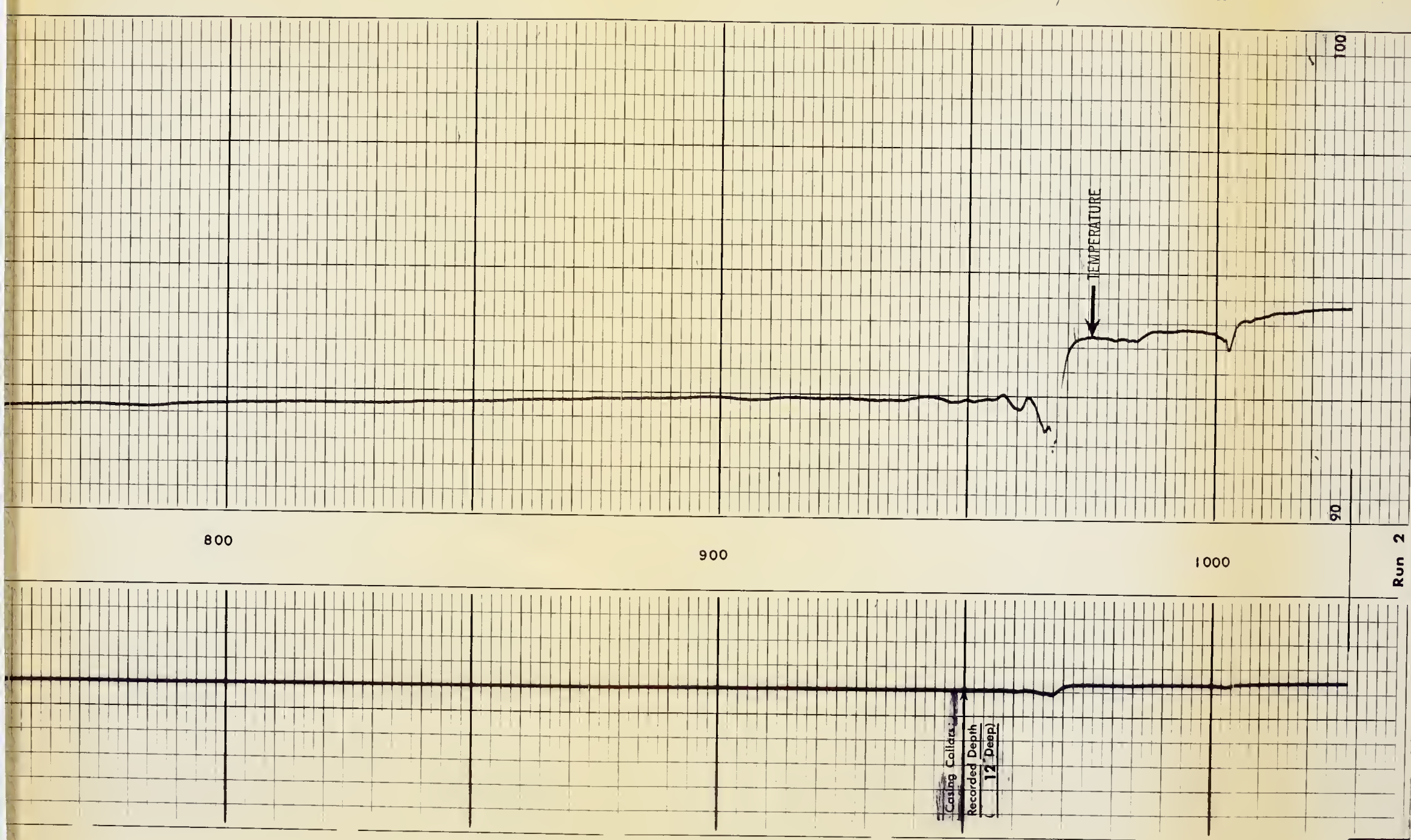






SCALE CHANGE





Casing Collars Recorded Depth (12' Deep)		Run 2	
0	200	90	100
Casing Collars Recorded 12' Deep			
TEMPERATURE ° F.			

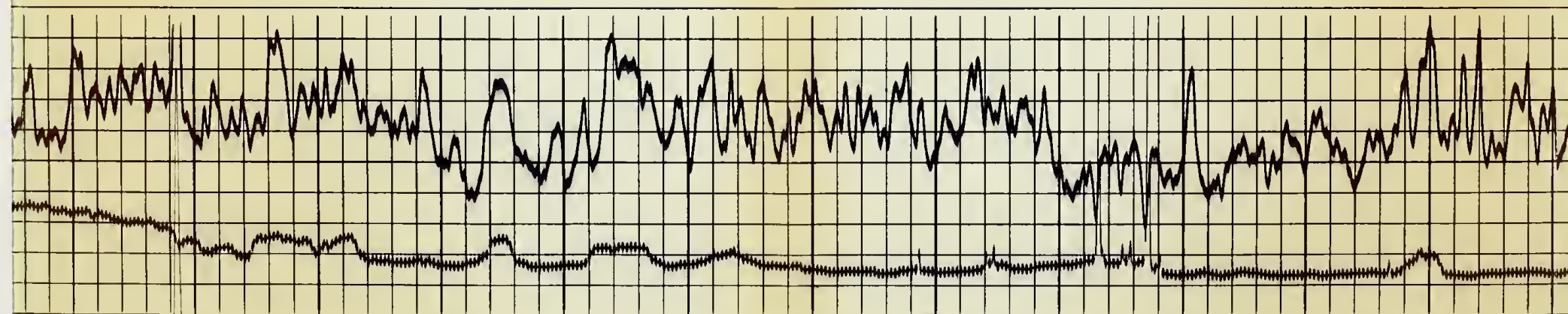
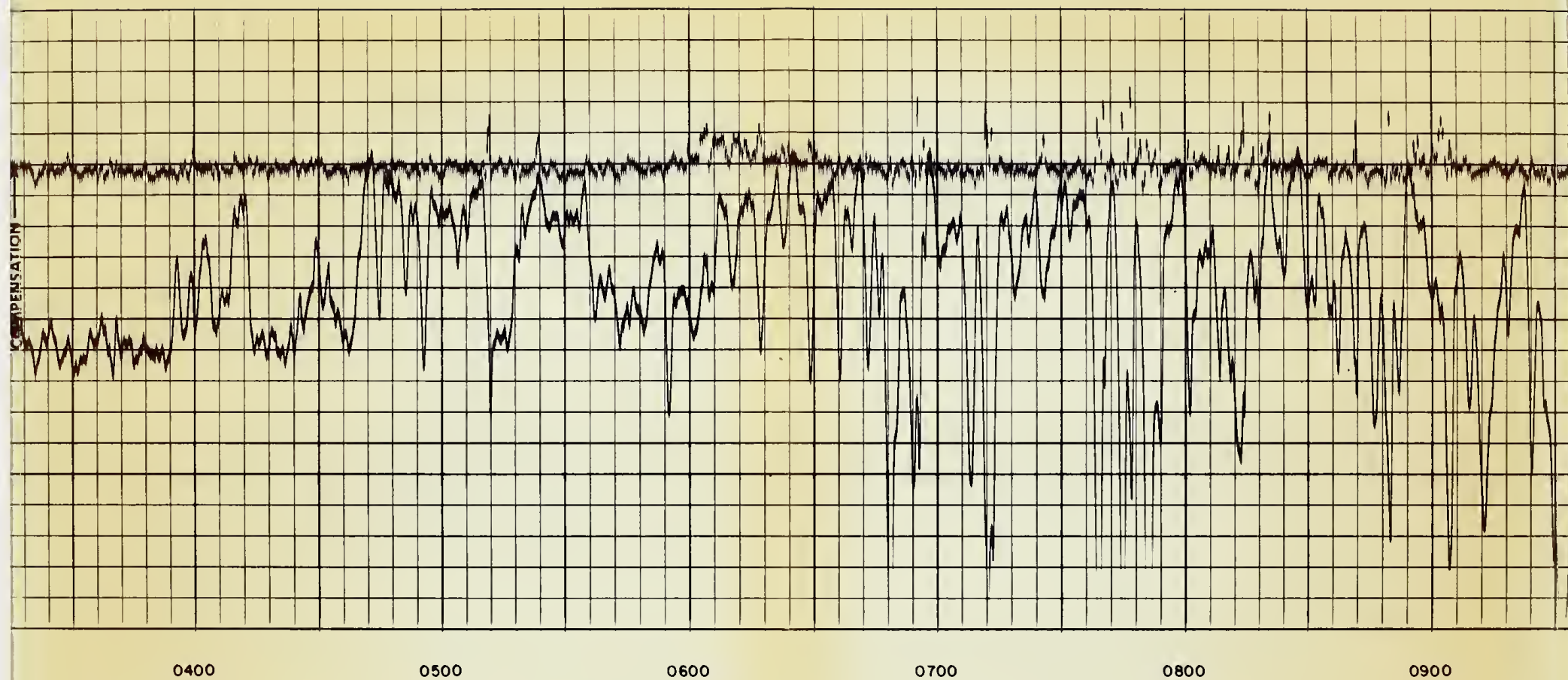
COMPANY	ATLANTIC RICHFIELD COMPANY	SCHL. F. R.	2602
WELL	SORGHUM GULCH #2	SCHL. T. D.	2603
FIELD	SORGHUM GULCH	DR. T. D.	2608
COUNTY	RIO BLANCO	STATE	COLORADO

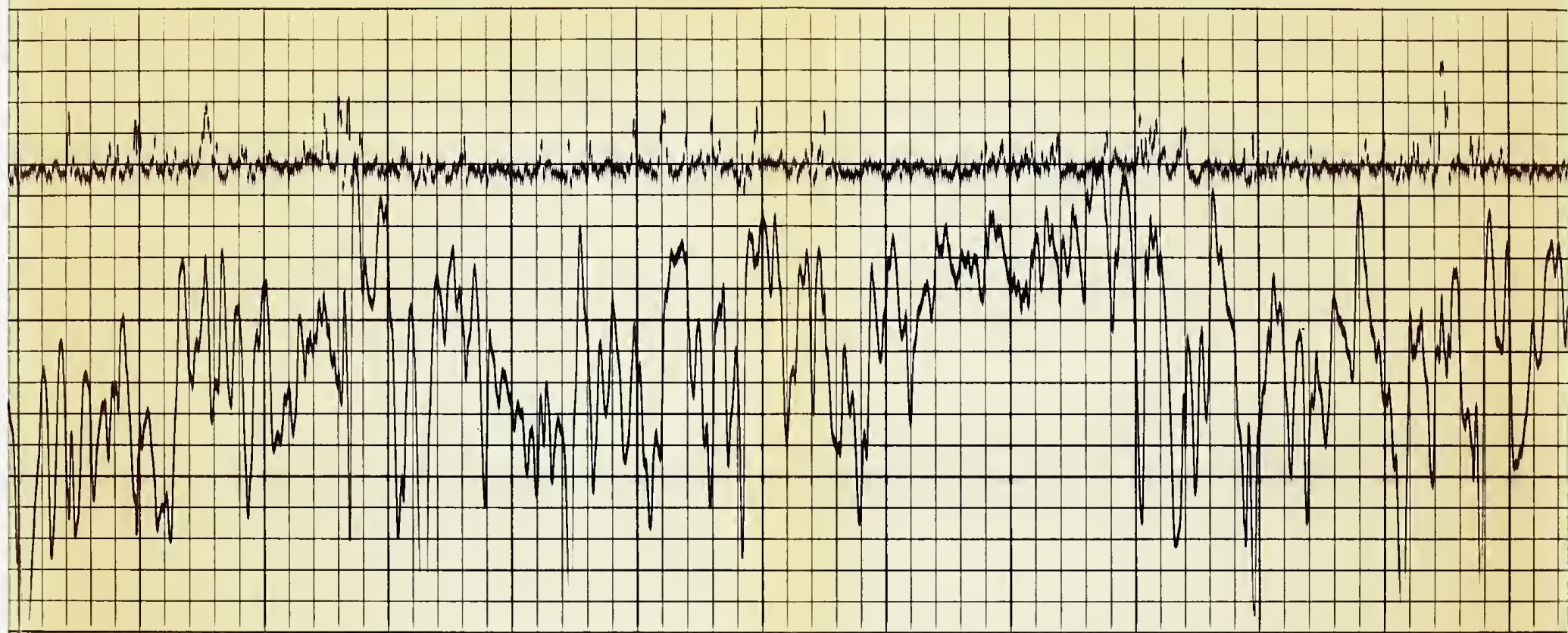


BIT SIZE/ COUNTO DATA		Csg. Size		Csg. Wt.	
Bit	From	To	From	To	To
1	176	2608	55/3	GL	176









1000

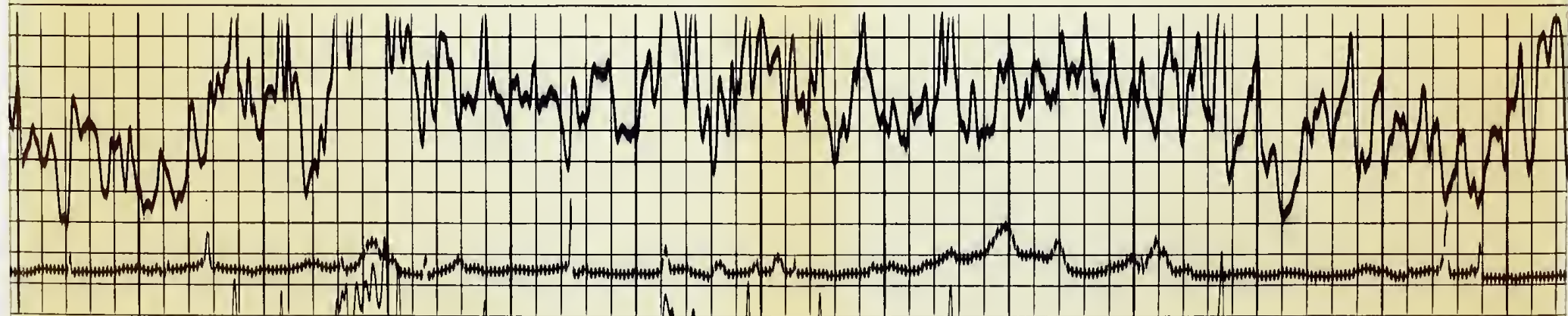
1100

1200

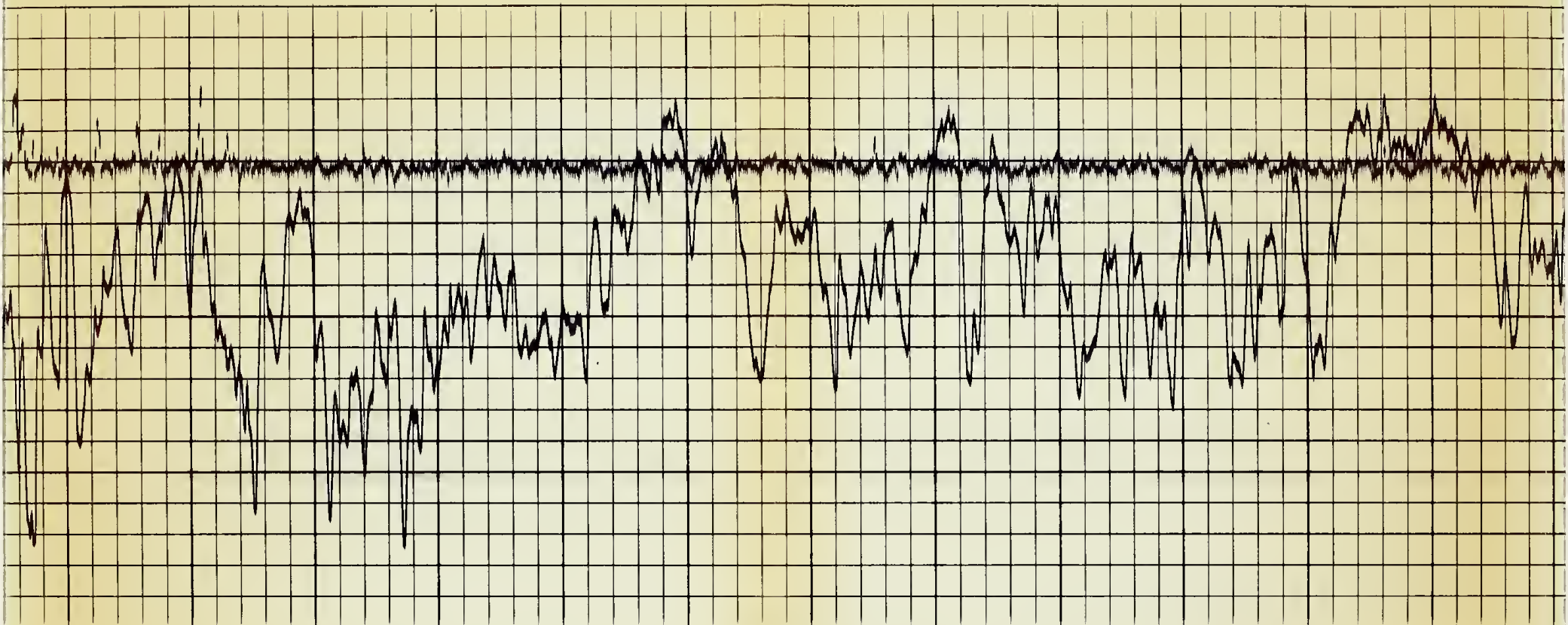
1300

1400

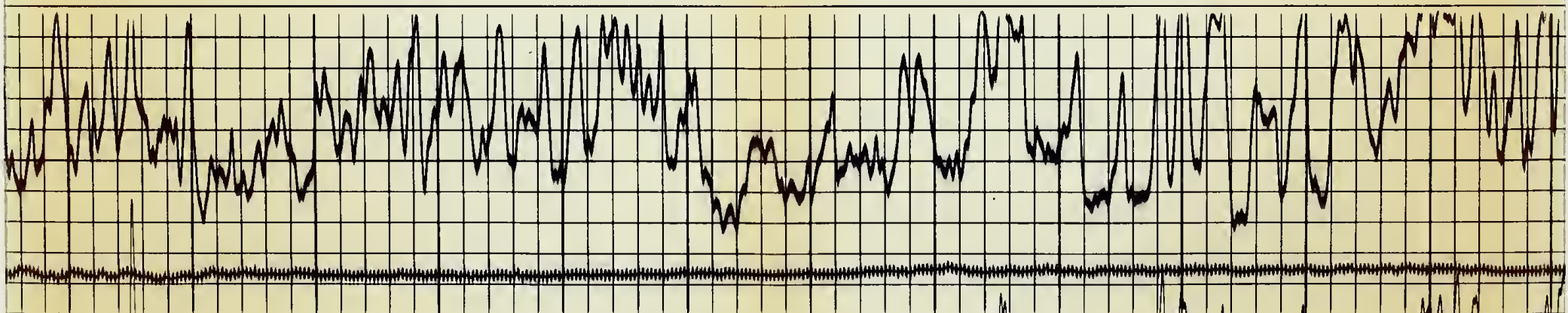
1500

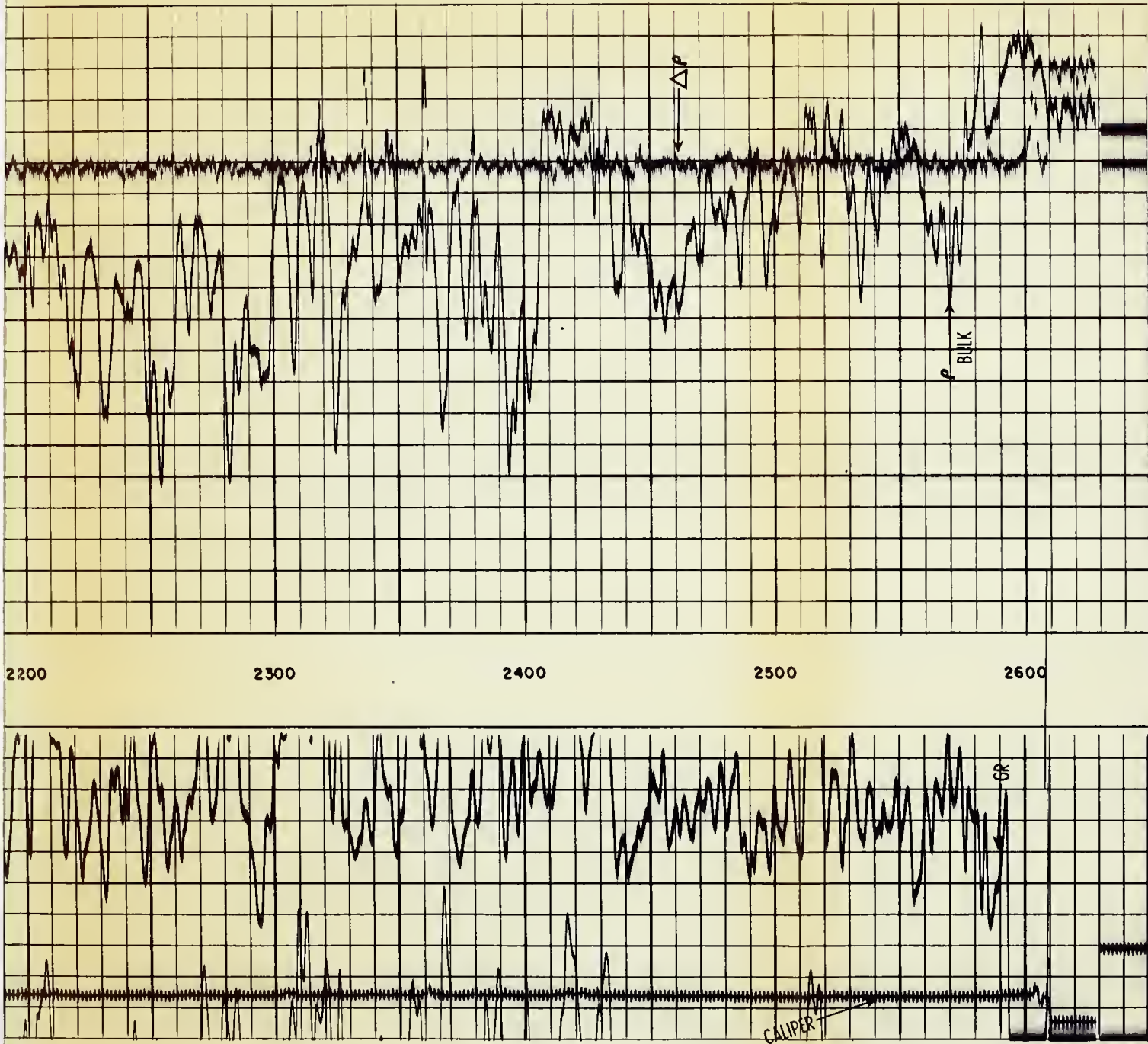






1600 1700 1800 1900 2000 2100 2200





DETAIL LOG 5" = 100"		CORRECTION GRAMS CC.	
CALIPER HOLE DIAM. IN INCHES	DEPTH	BULK DENSITY GRAMS CC.	
		1.7	2.7



1.7  
1.2  
.7

0000

0100

Casing

0200

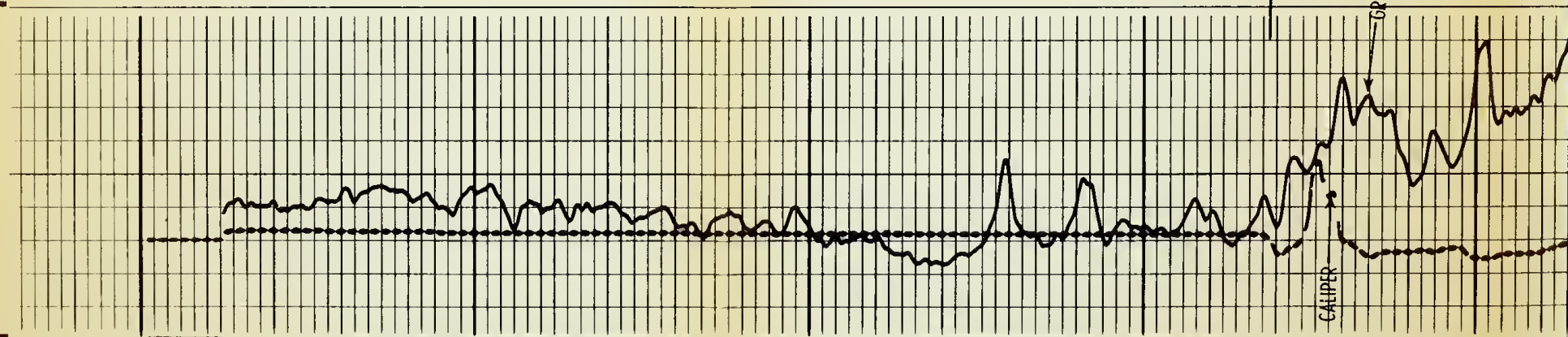
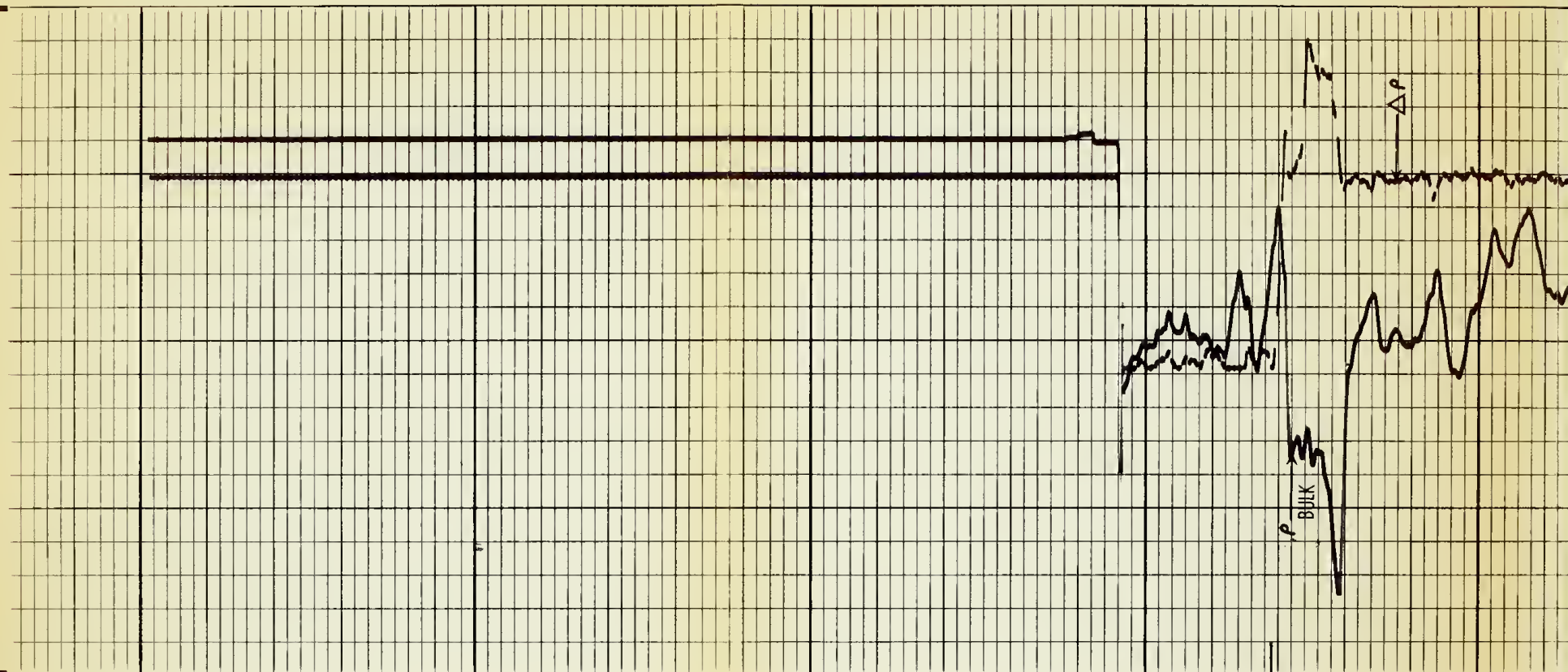
300  
150

CALIPER

GR

$\rho$  BULK

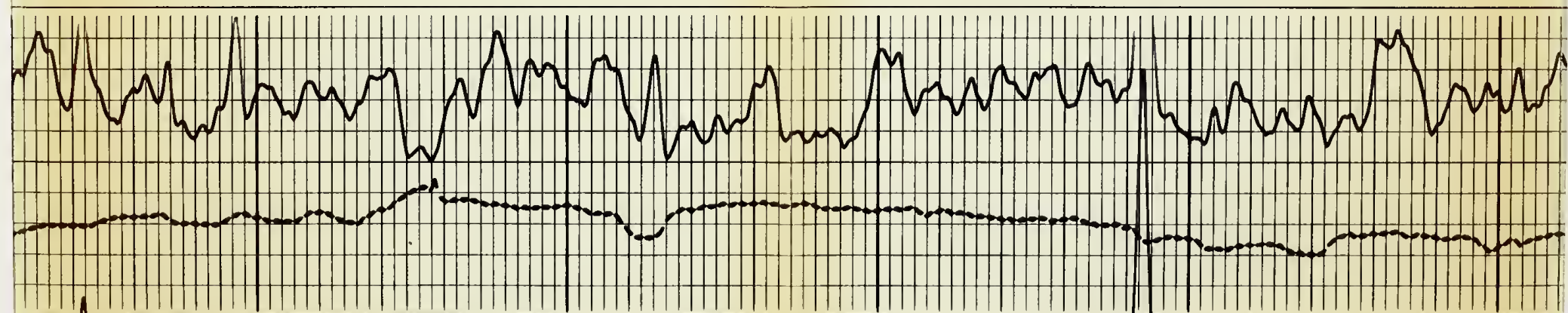
$\Delta\rho$



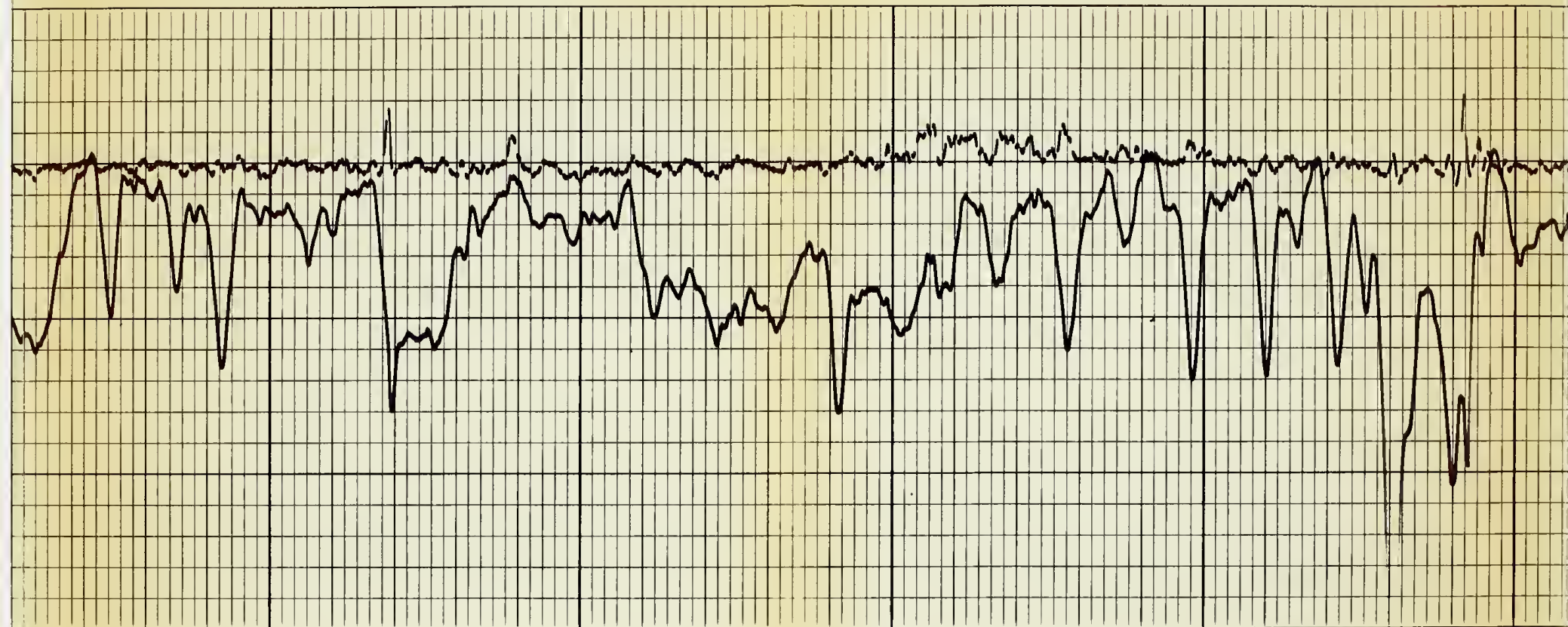


0300

0400



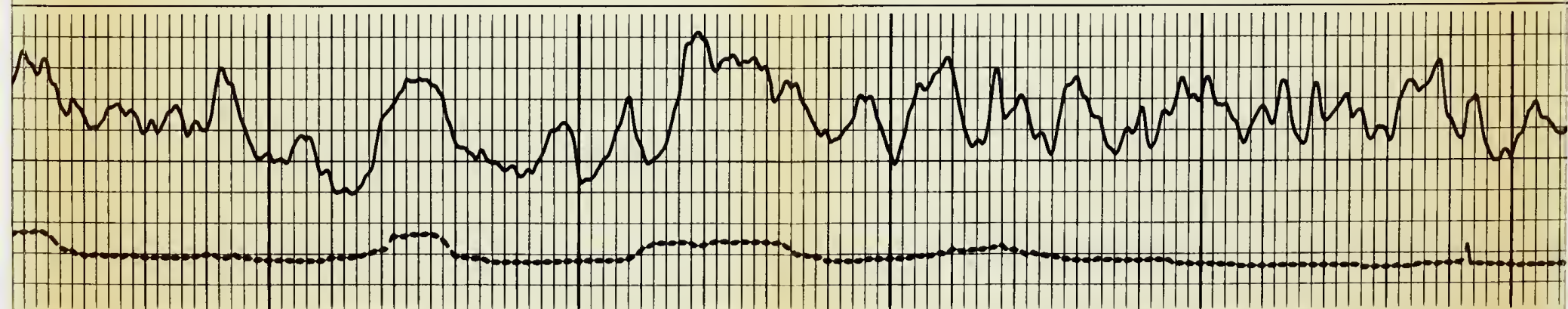


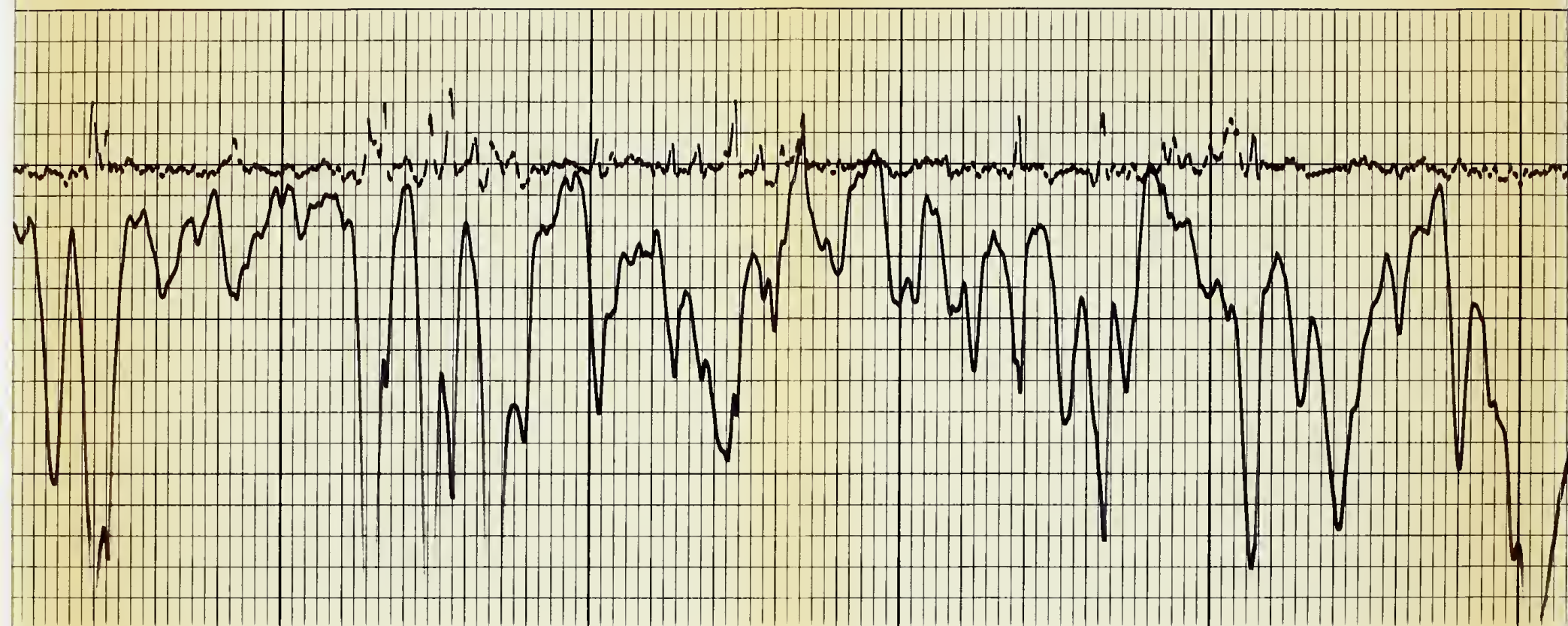


0500

0600

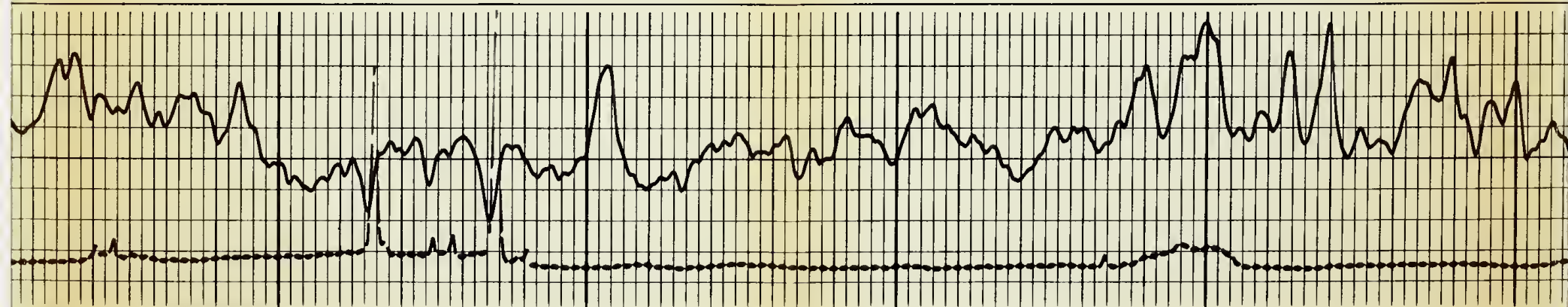
0700



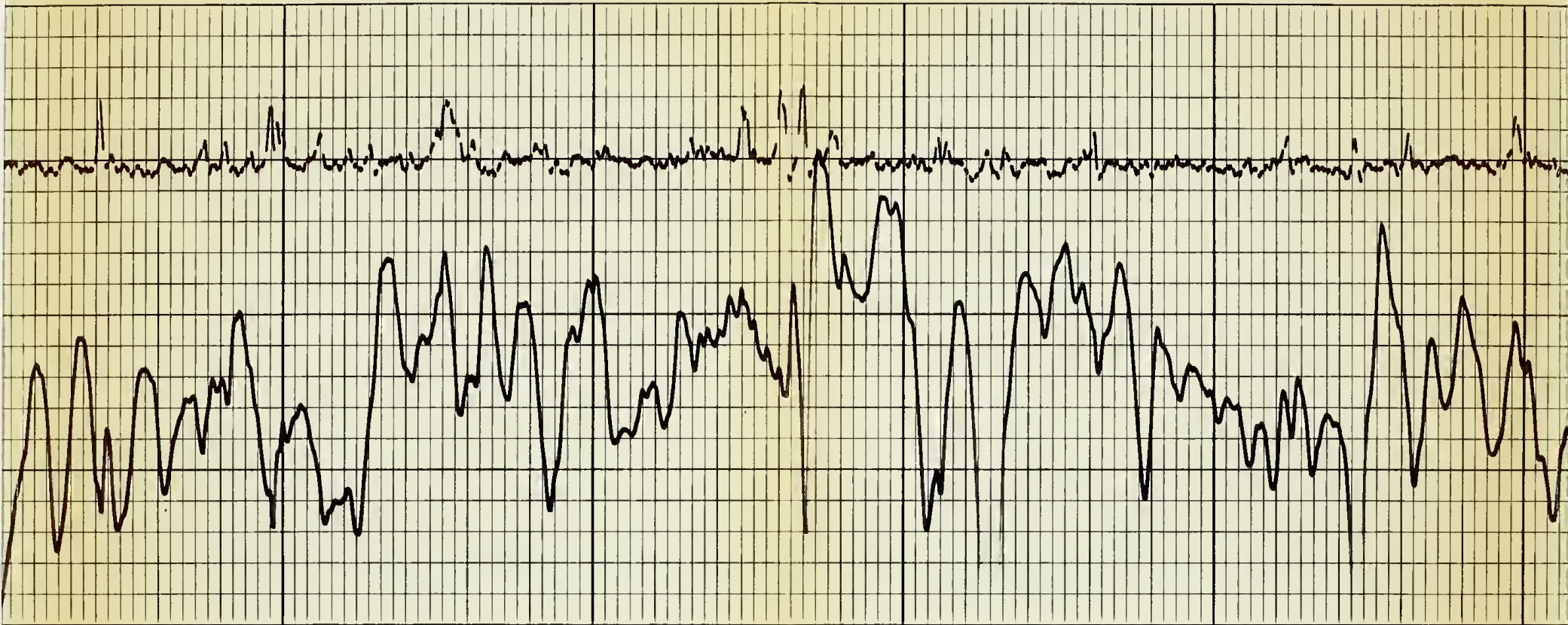


0800

0900



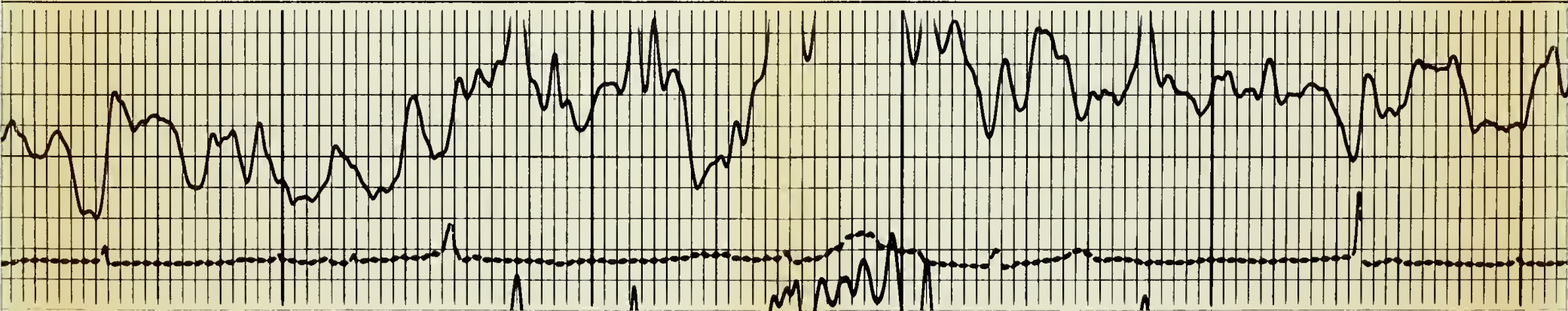


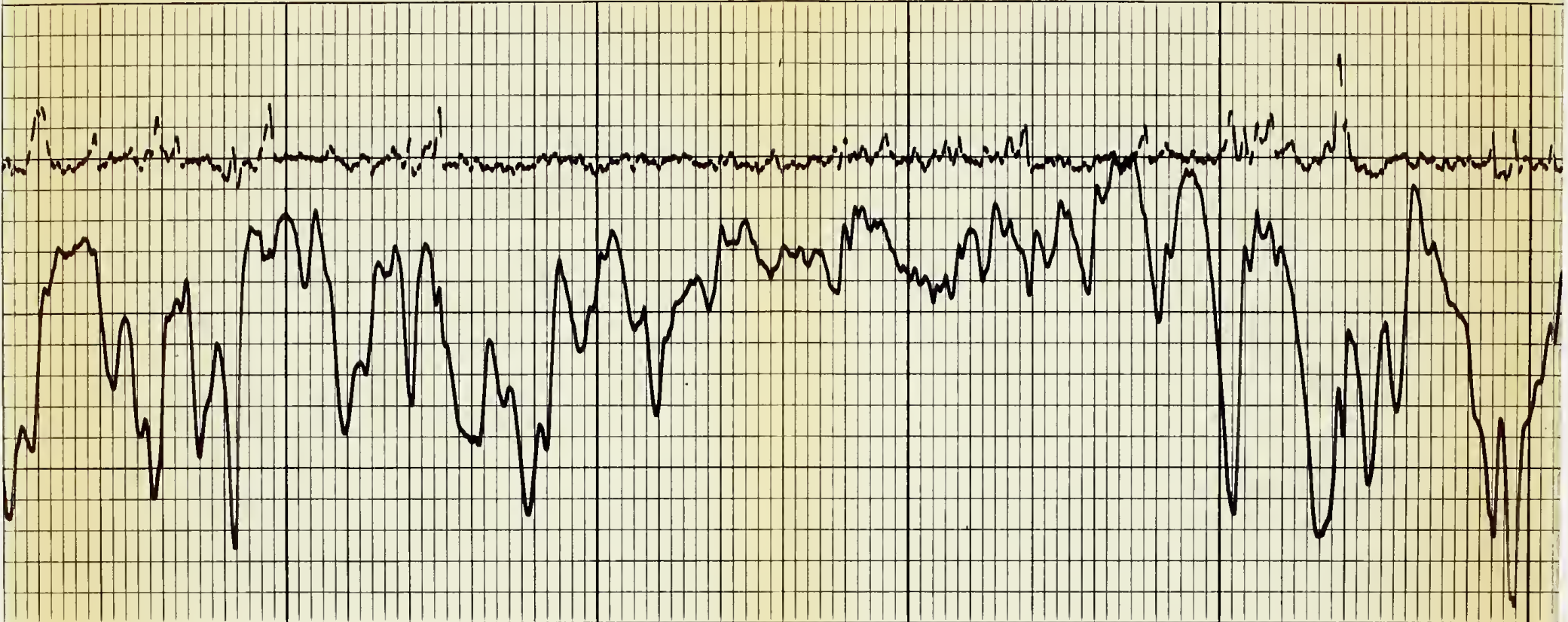


1000

1100

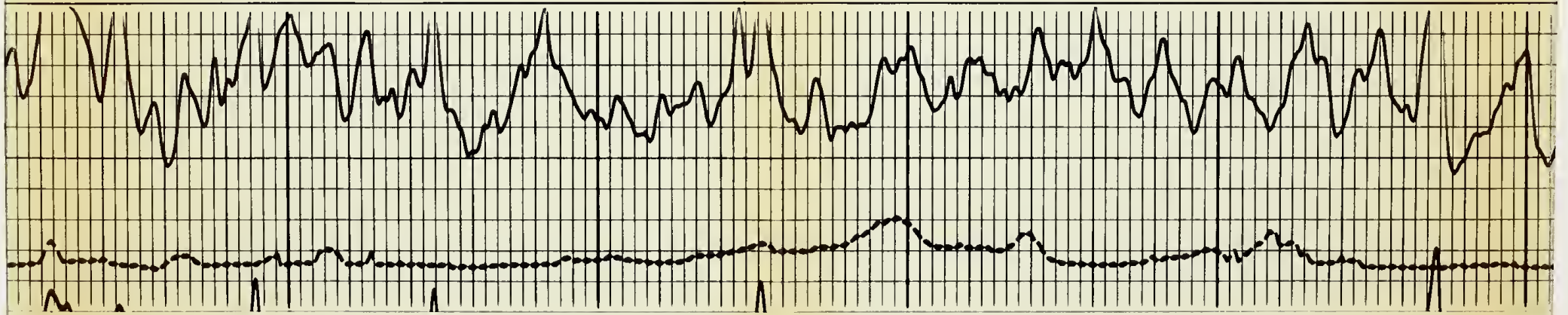
1200





1300

1400



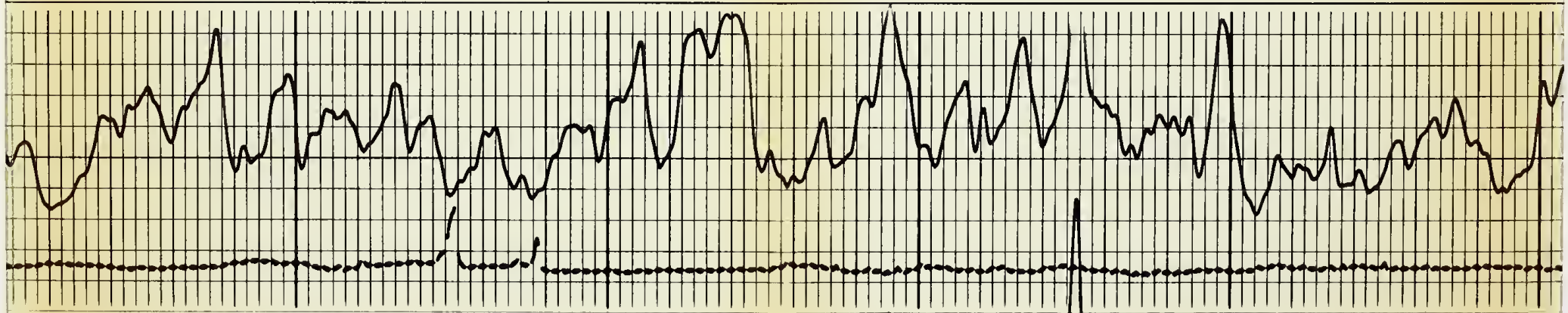


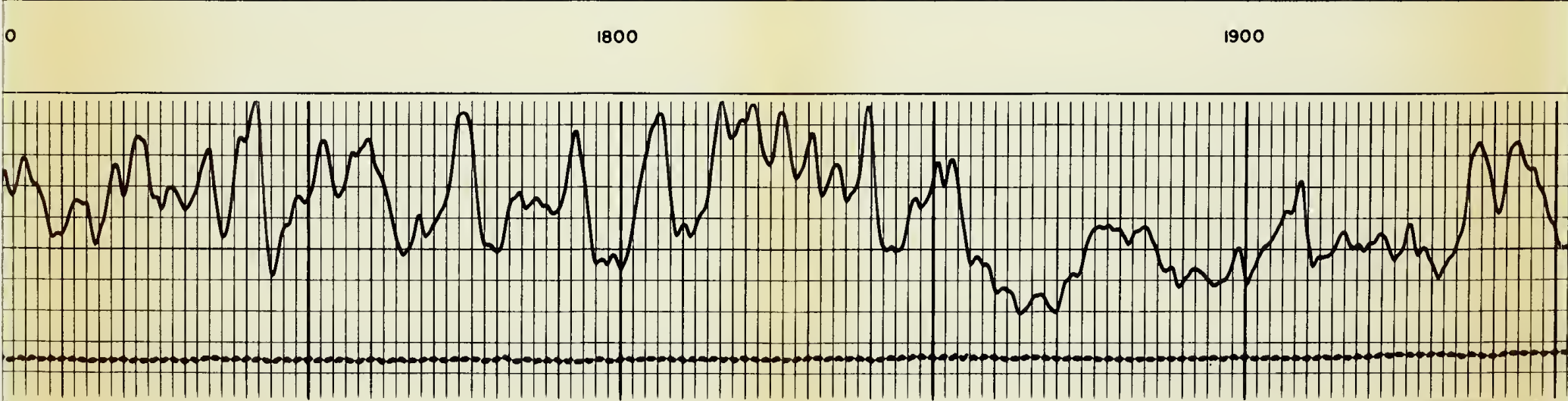
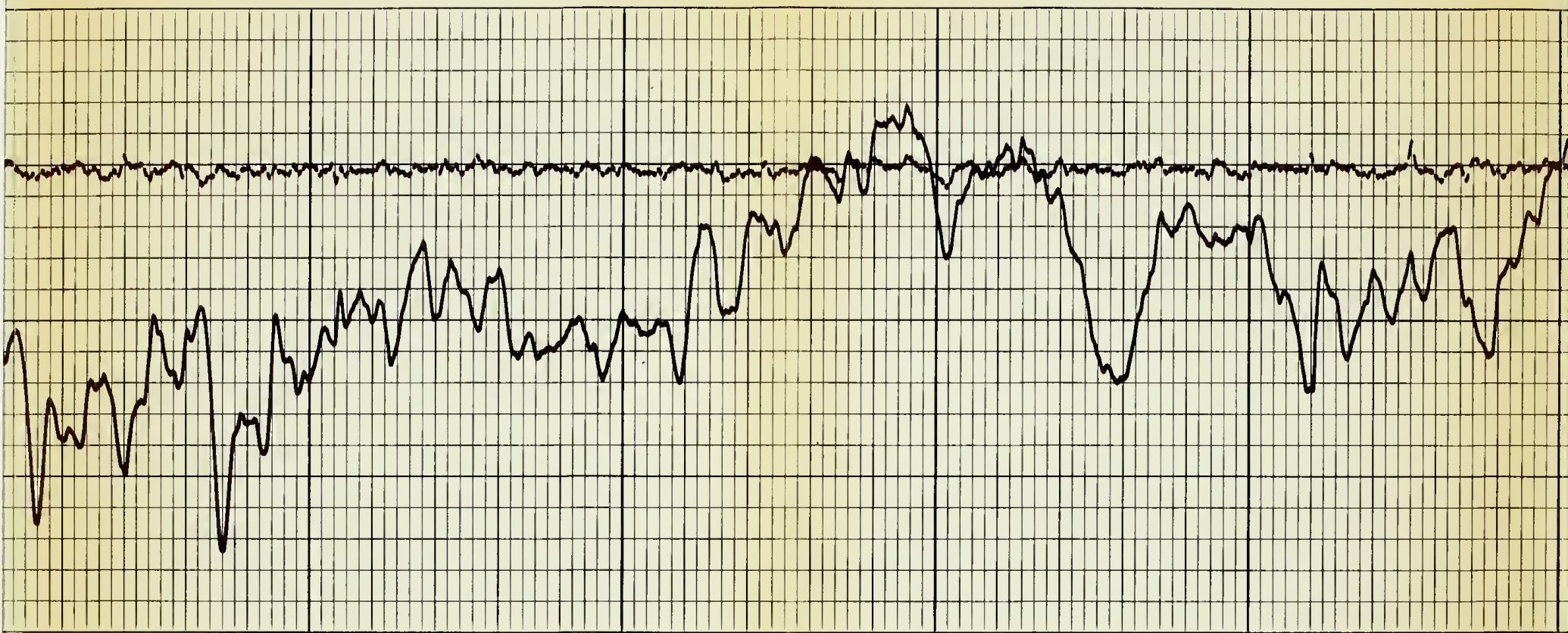


1500

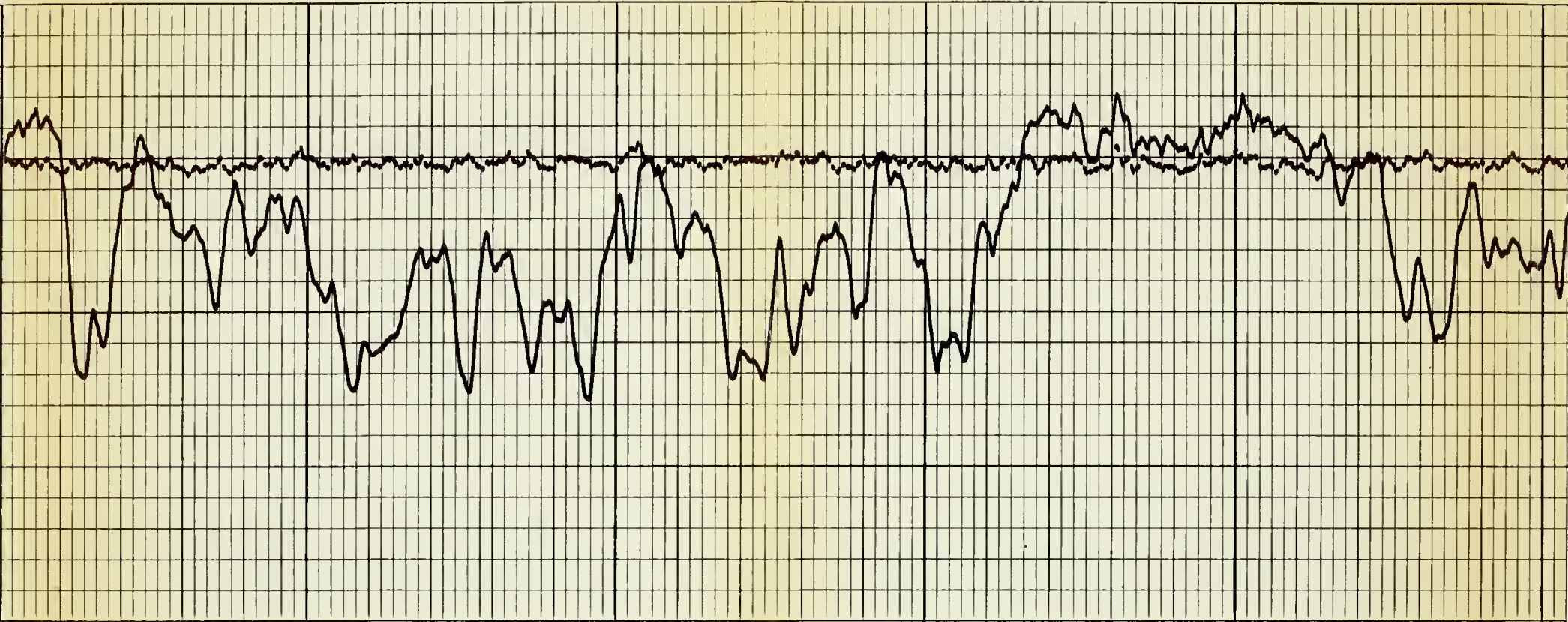
1600

1700





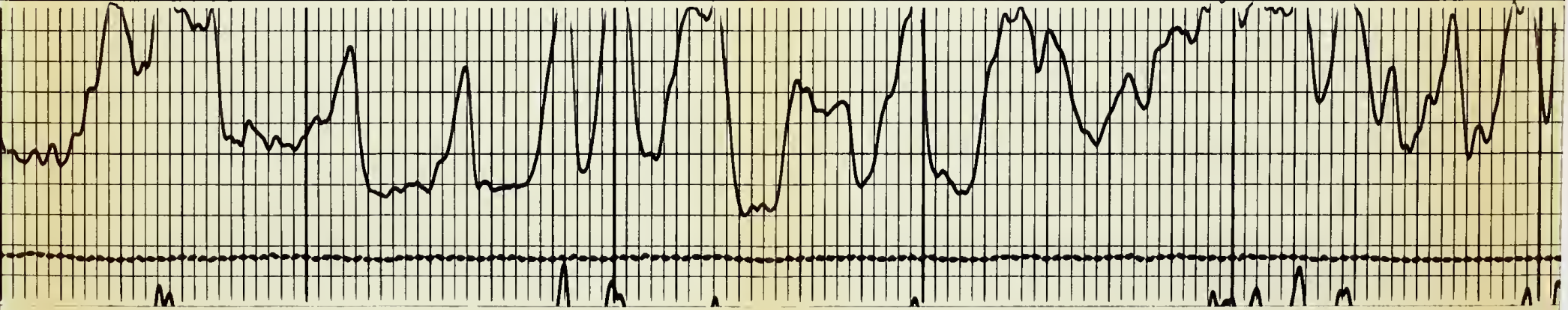


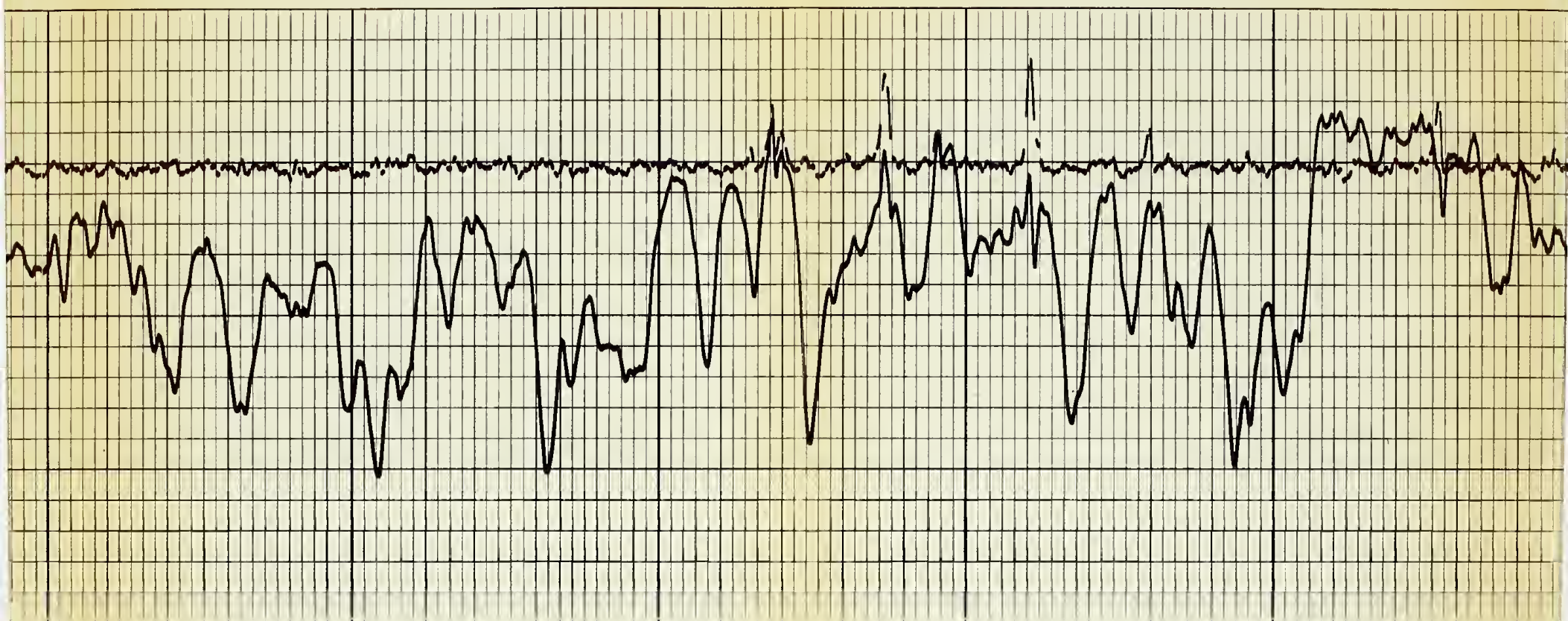


2000

2100

2200

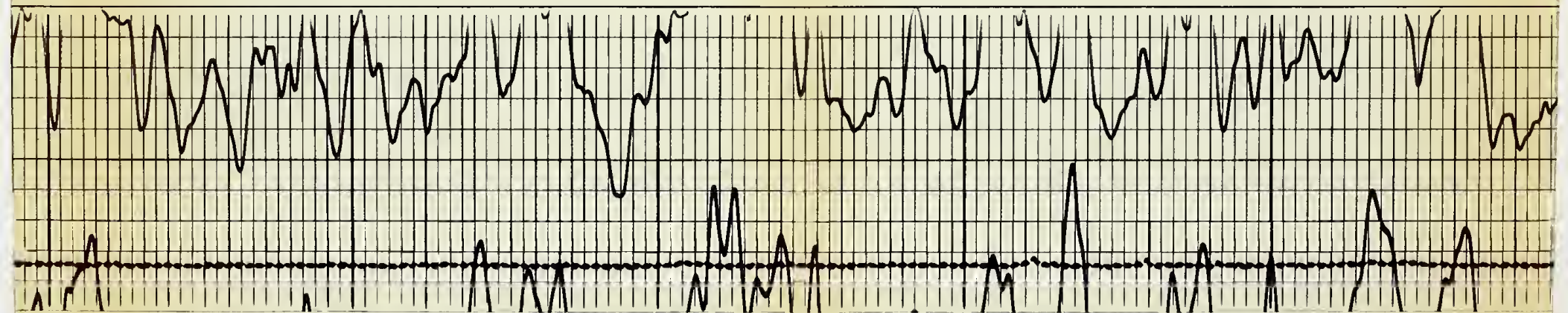




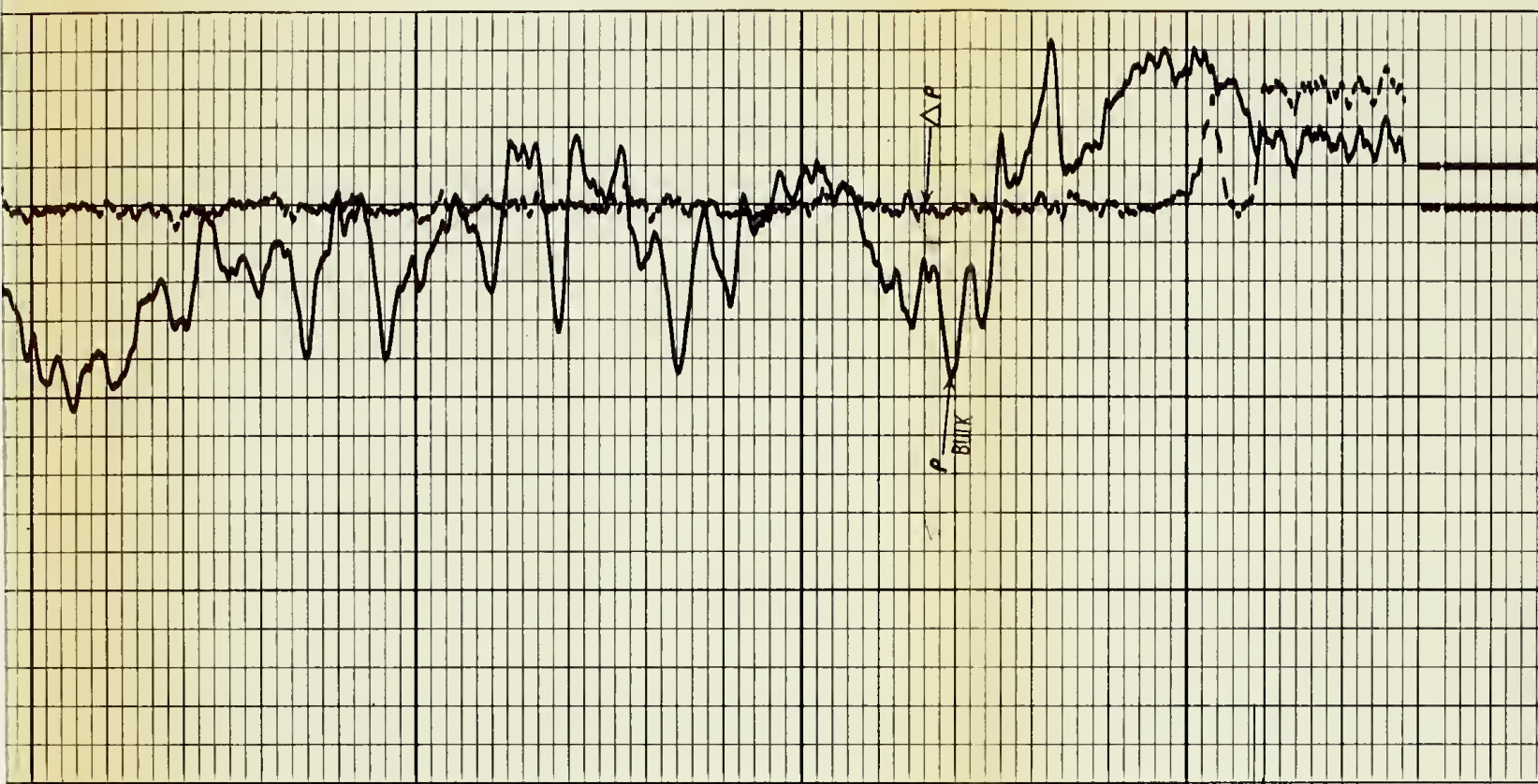
2200

2300

2400

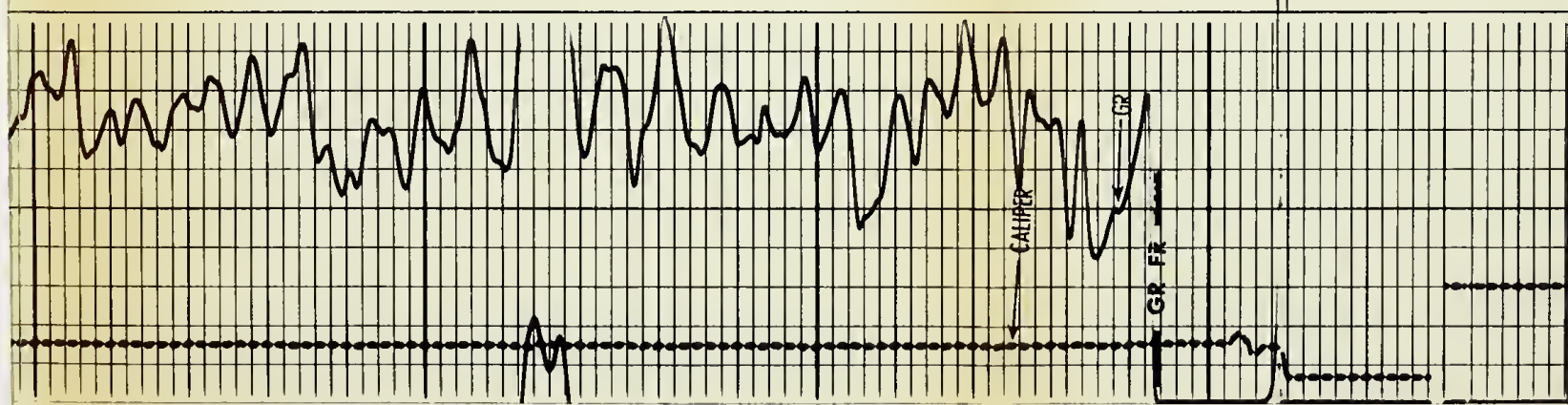






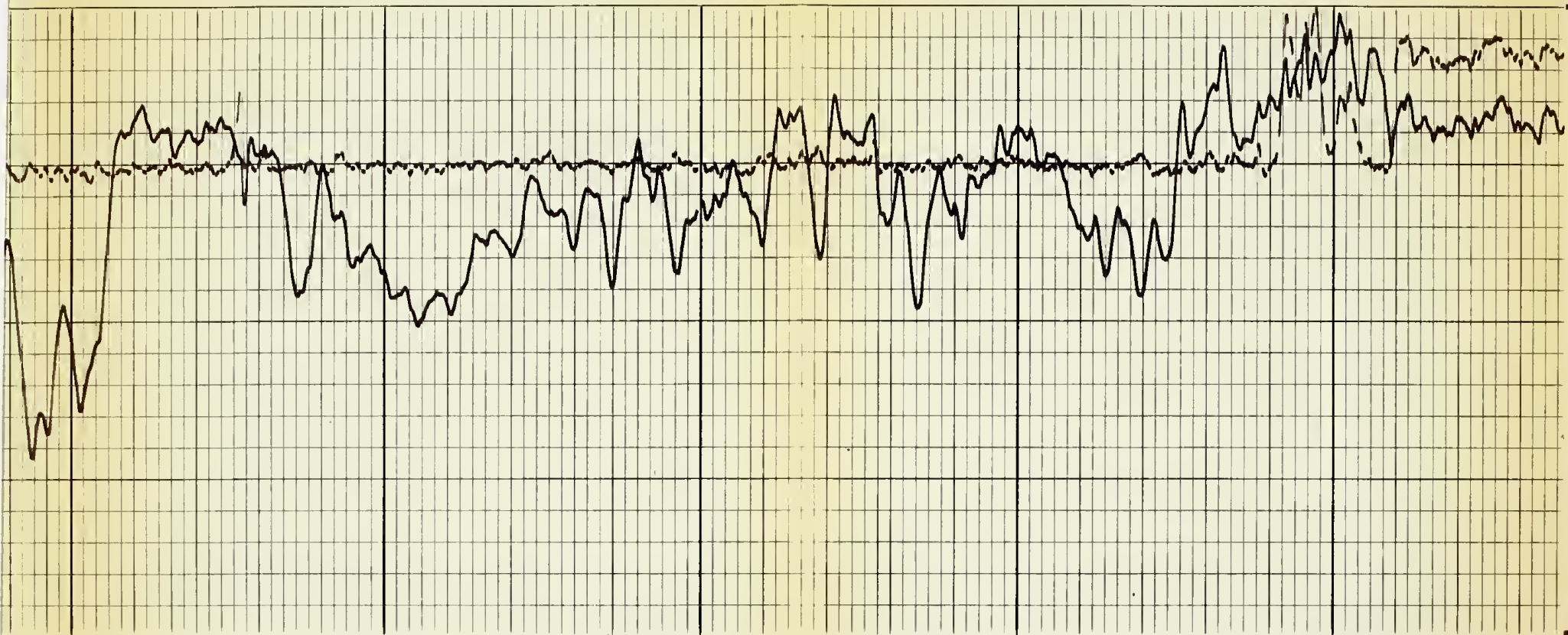
2500

2600



REPEAT SECTION

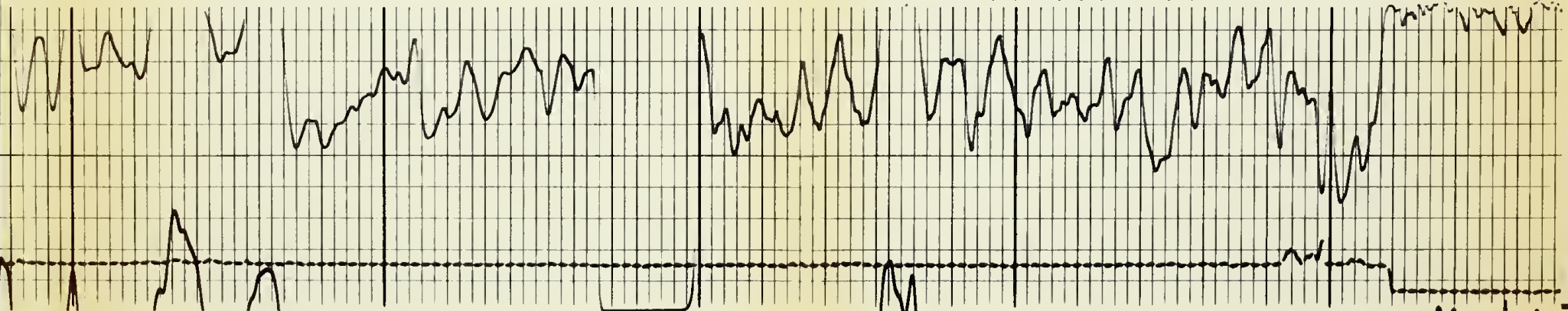




240C

250C  
INVALID

260C  
MEMORIZER OUT — CURVES INVALID



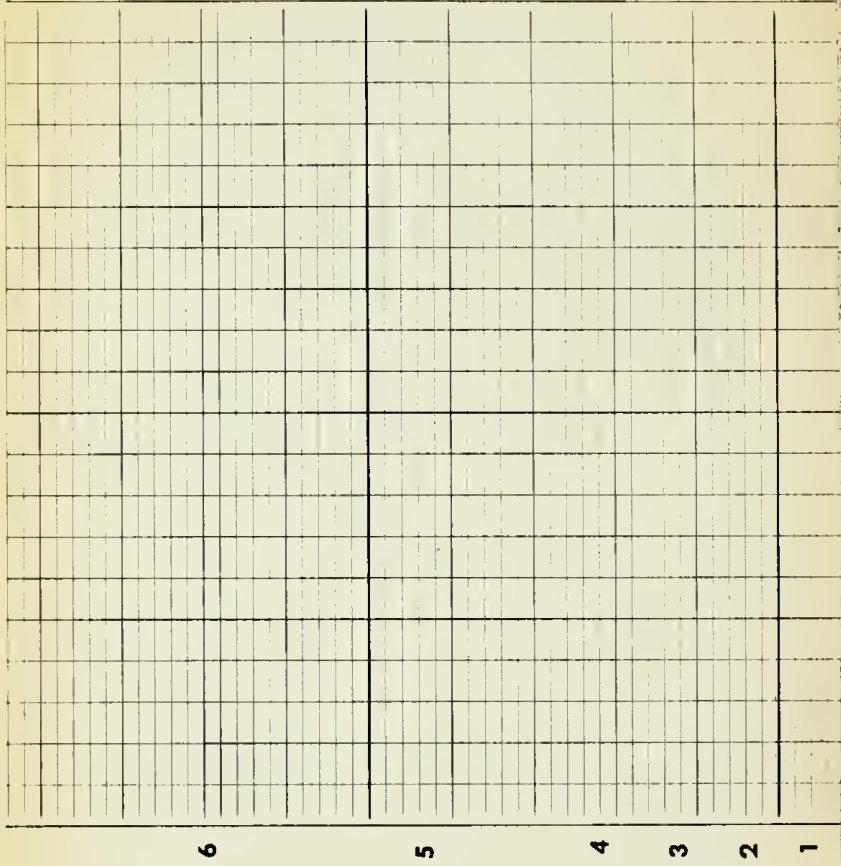
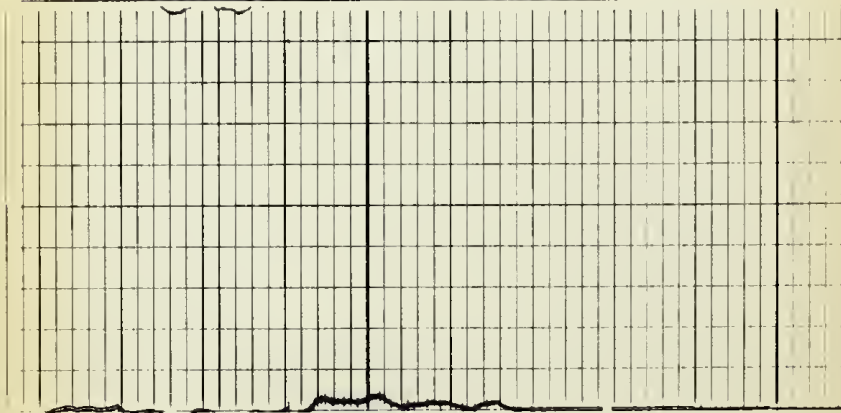


150 150 300	1.7 2.2 2.7	1.7 2.2 2.7	1.7 2.2 2.7
<b>GAMMA RAY</b> API UNITS		<b>BULK DENSITY</b> GRAMS/CC.	
5 15		-0.25 0 +.25	
<b>CALIPER</b> HOLE DIAM. IN INCHES		<b>CORRECTION</b> GRAMS/CC.	
COMPANY <u>ATLANTIC RICHFIELD COMPANY</u>			
WELL <u>SORGHUM GULCH #8</u>			
FIELD <u>SORGHUM GULCH</u>			
COUNTY <u>RIO BLANCO</u> STATE <u>COLORADO</u>			
SCHL. FR <u>2609</u> SCHL. TD <u>2610</u> DRLR TD <u>2608</u> Elev: KB <u>----</u> DF <u>6542</u> GI <u>6538</u>			

### CALIBRATION RECORD

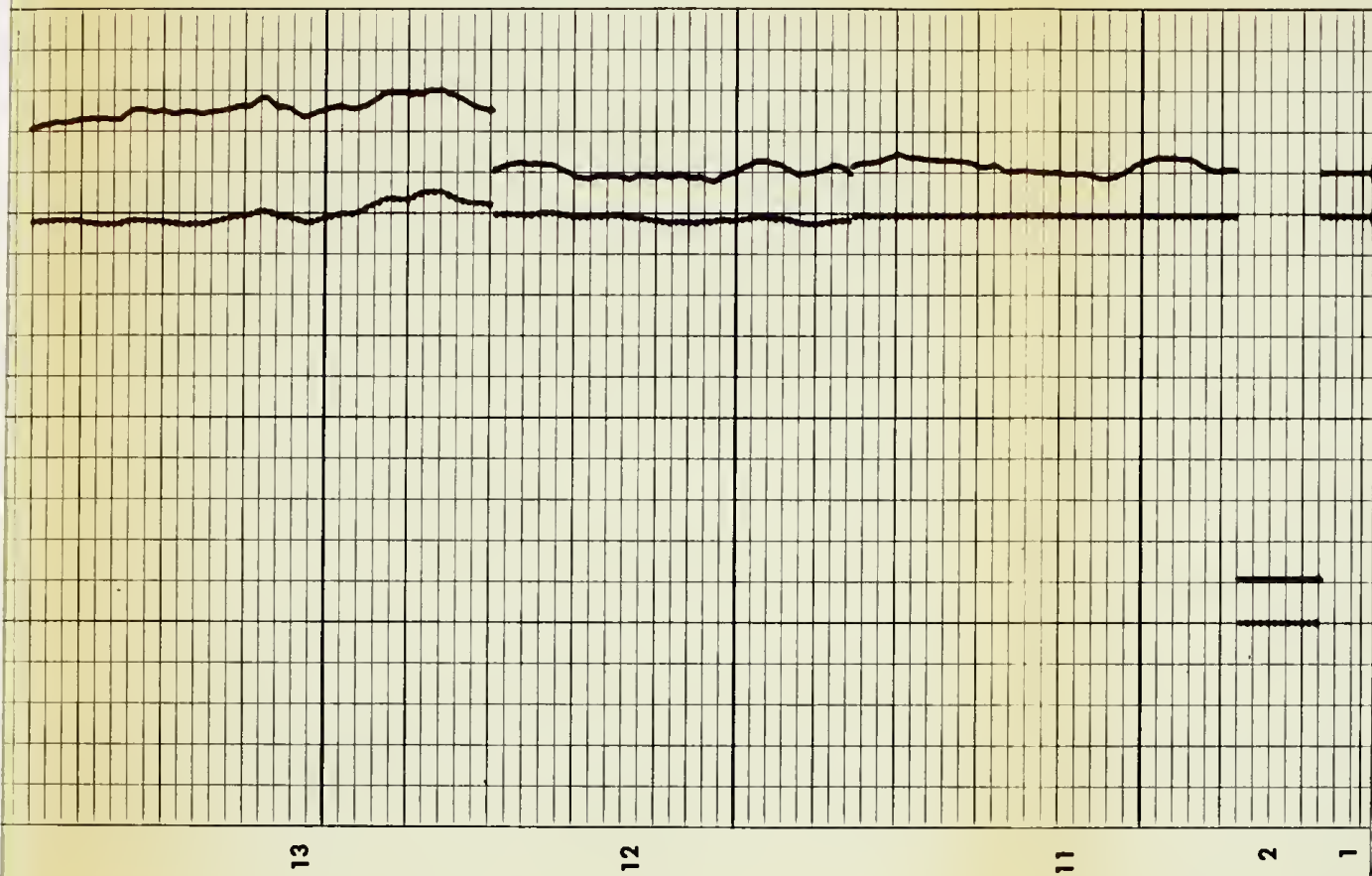


GR CALIBRATION

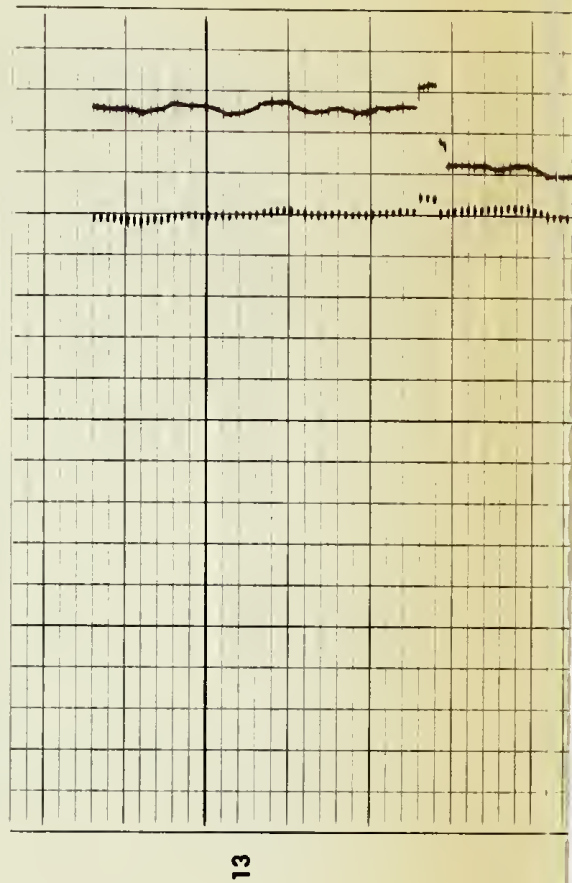


AFTER SURVEY CALIBRATION





BEFORE SURVEY CALIBRATION





12

11

2

1

PANEL TEST

7

6

5

4

3

2

1

13

NOV 15, 1974  
 PGP-EP 355  
 PGC-EP 333  
 PBN D-582  
 PGS-EP 235

AL 1360-14-18

35R-3 2940  
158100.5957  
100 3.97079  
CR # 563 013

12

12

22

7

# FORMATION DENSITY COMPENSATED CALIBRATION CODING

1. MECHANICAL ZERO
2. RECORDER SENSITIVITY

## PANEL TEST

### FDC LIQUID

POS	$\frac{\rho}{\Delta \rho}$	$\Delta \rho$
# 1	2.92	.00
# 2	2.78	+.14
# 3	2.42	-.10
# 4	2.35	.00
# 5	2.08	.01

8. MECHANICAL ZERO CALIPER

9. 8" RING

10. 12" RING

11. TOOL CALIBRATE #1 SET  $\rho = 2.50$

12. TOOL CALIBRATE #2 SET  $\Delta \rho = .00$

13. LOG POSITION  $\rho = 2.59$ ,  $\Delta \rho = .015$

## ← CALIBRATION RECORD

COMPANY ATLANTIC RICHFIELD COMPANY

WELL SORGHUM GULCH #8

FIELD SORGHUM GULCH

COUNTY RIO BLANCO STATE COLORADO

SCHL. FR 2609  
SCHL. TD 2610  
DRLR TD 2608  
Elev: KB

DF 6542  
GL 6538





CHAMPION<sup>®</sup> NO K-93  
CLASP VER. 1218